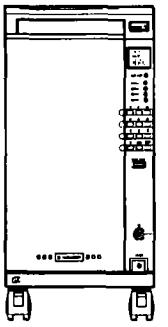
Service Manual

PIONEER
The Art of Entertainment



ORDER NO.
RRV1654

CD-ROM CHANGER
DRM-1004X-4
DRM-1004X-2
CD-ROM WRITER CHANGER
DRM-1004XR
READER DRIVE UNIT
DR-D4XI
WRITER DRIVE UNIT
DR-R4XI
OPTION READER KIT
DR-D134X

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model					Power Requirement	Remarks
	DRM-1004X-4	DRM-1004X-2	DRM-1004XR	DR-D4XI, DR-R4XI	DR-D134X		
IUC	○	–	–	–	–	AC120V/230V	
IUCYV	–	○	○	–	–	AC120V/230V	
ZUCYV/WL	–	–	–	–	○	DC power supply from other system	
–	–	–	–	○	–	DC power supply from other system	

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PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE, INC. P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.
PIONEER ELECTRONIC (EUROPE) N.V. Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 501 Orchard Road, #10-00 Lane Crawford Place, Singapore 0923

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1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

NOTICE
(FOR CANADIAN MODEL ONLY)
Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE
(POUR MODÈLE CANADIEN SEULEMENT)
Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

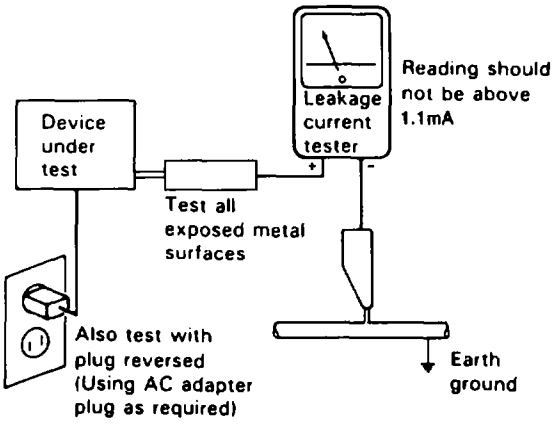
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 1.1mA.


Reading should not be above 1.1mA
Leakage current tester
Device under test
+
-
Test all exposed metal surfaces
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

VARNING!
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.

LASER
Kuva 1
Lasersateilyn
varoitusmerkki

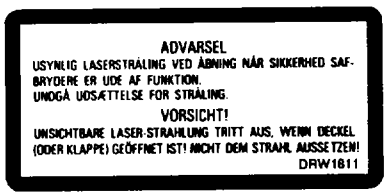
WARNING!
DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

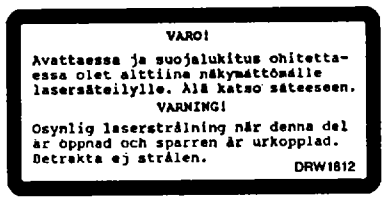
IMPORTANT
THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

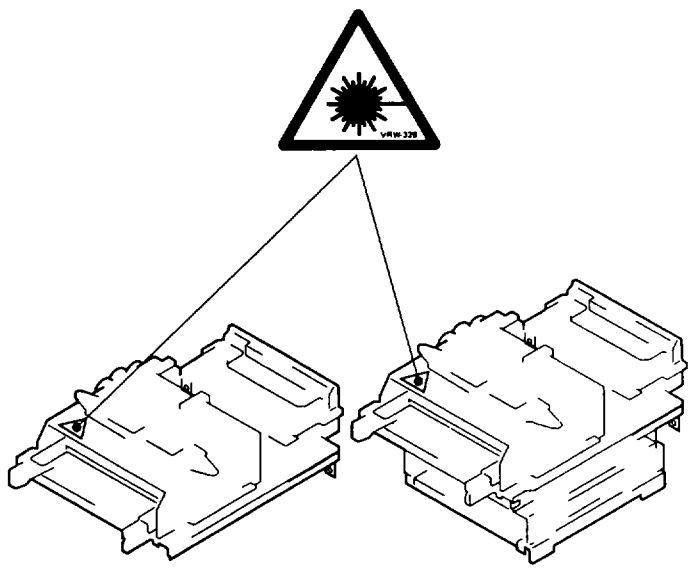
LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

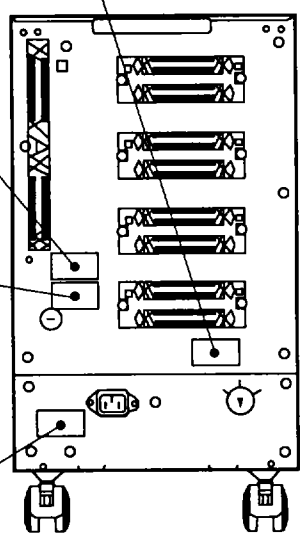
LASER
Picture 1
Warning sign for
laser radiation

LABEL CHECK


ADVARSEL
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHED SAFBRYDERE ER UDE AF FUNKTION.
UNDGÅ UDSÆTTELSE FOR STRÅLING.
VORSICHT!
UNSICHTBARE LASER-STRAHLUNG TRITT AUS, WENN DECKEL (ODER KLAPPE) GEÖFFNET IST! NICHT DEM STRAHL AUSSETZEN!
DRW1811


VARO!
Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.
VARNING!
Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad.
Betrakta ej strålen.
DRW1812





DRM-1004X-4 (Rear View)

Additional Laser Caution

1. The ON/OFF (ON : low level, OFF : high level) status of the $\overline{\text{CLMPE}}$ signals for detecting the loading state are detected by the drive CPUs, and the design prevents laser diode oscillation when the $\overline{\text{CLMPE}}$ signal turns OFF.
   In normal operation, if no disc is clamped, the laser diode oscillation is disabled.
   However, the interlock does not always operate in the test mode. *
2. When the door or cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

* : Refer to pages 125, 126 and 130.

2. SYSTEM CONSTRUCTION

- **DRM-1004X-4 (Fig. 1)**

  Reader Drive Unit ····· DR-D4XI × four units

- **DRM-1004X-2 (Fig. 2)**

  Reader Drive Unit ····· DR-D4XI × two units

- **DRM-1004XR (Fig. 3)**

  Reader Drive Unit ····· DR-D4XI × two units
  Writer Drive Unit ····· DR-R4XI × one unit

- **Option Reader Kit (Fig. 2)**

  DR-D134X····· for DRM-1004X-2

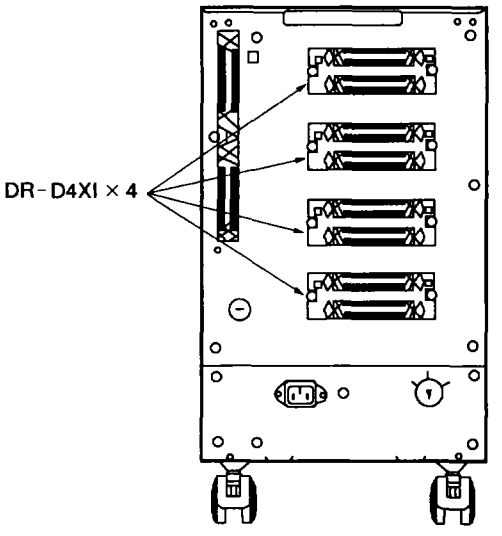


Fig. 1 DRM-1004X-4

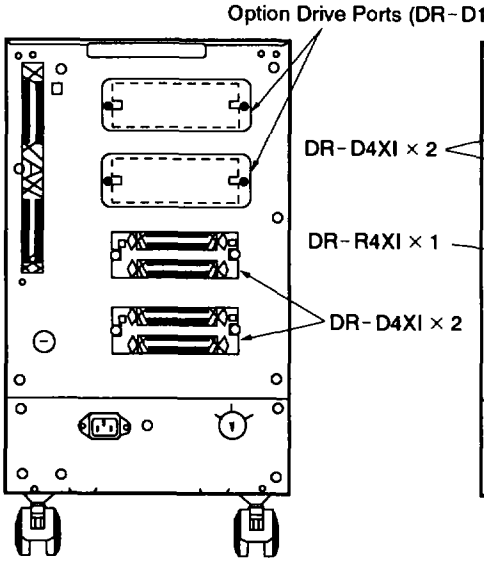


Fig. 2 DRM-1004X-2

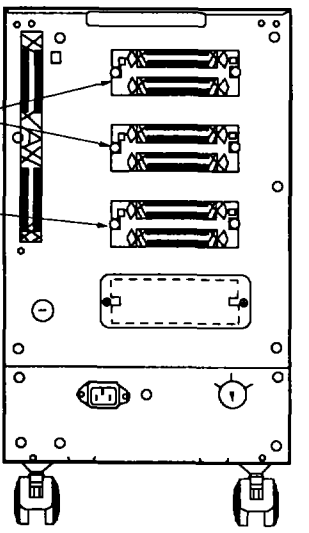
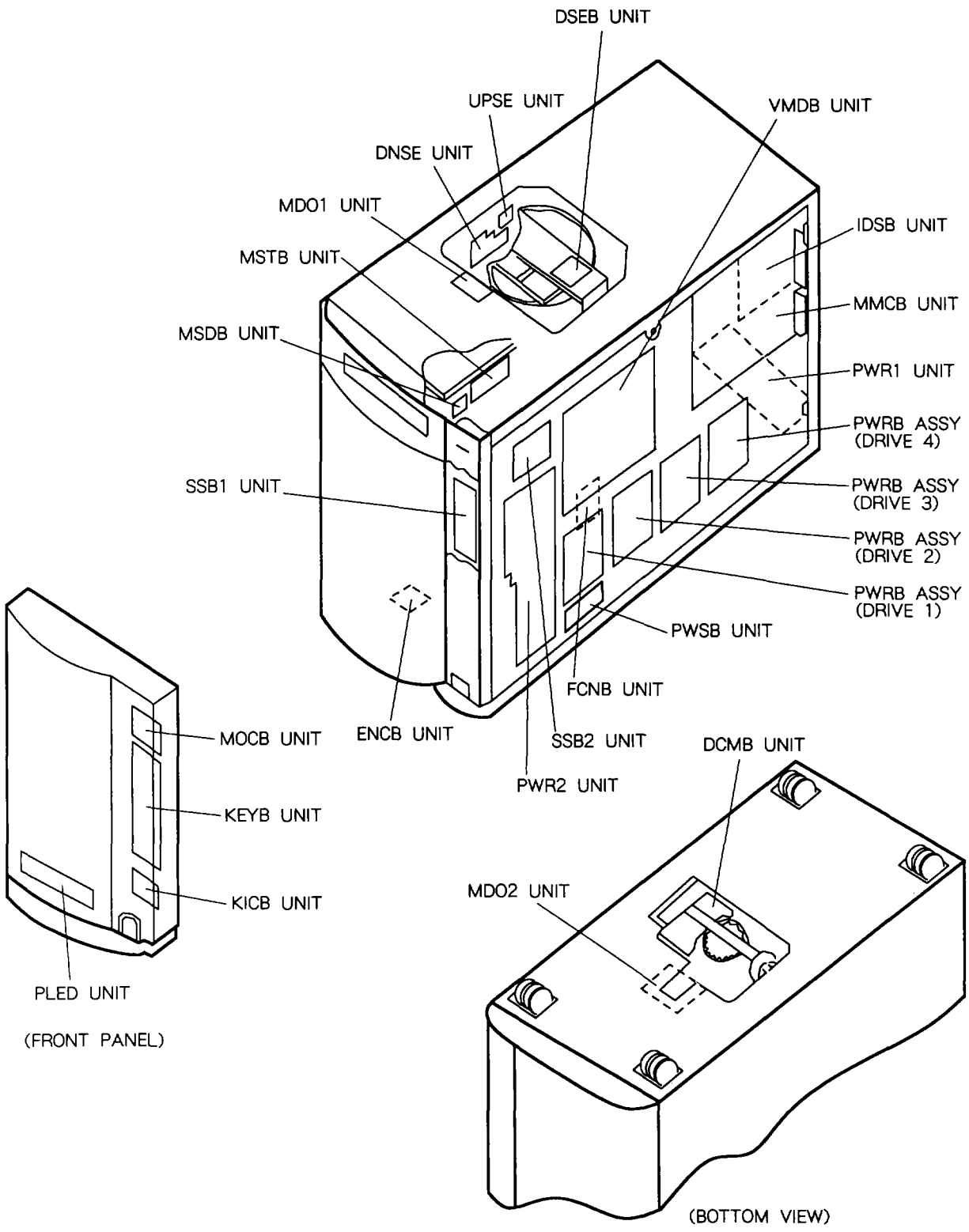


Fig. 3 DRM-1004XR

3. PCB LOCATION

(DRM-1004X-4)



4. EXPLODED VIEWS, PACKING AND PARTS LIST

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

4.1 MAIN SECTION (1)

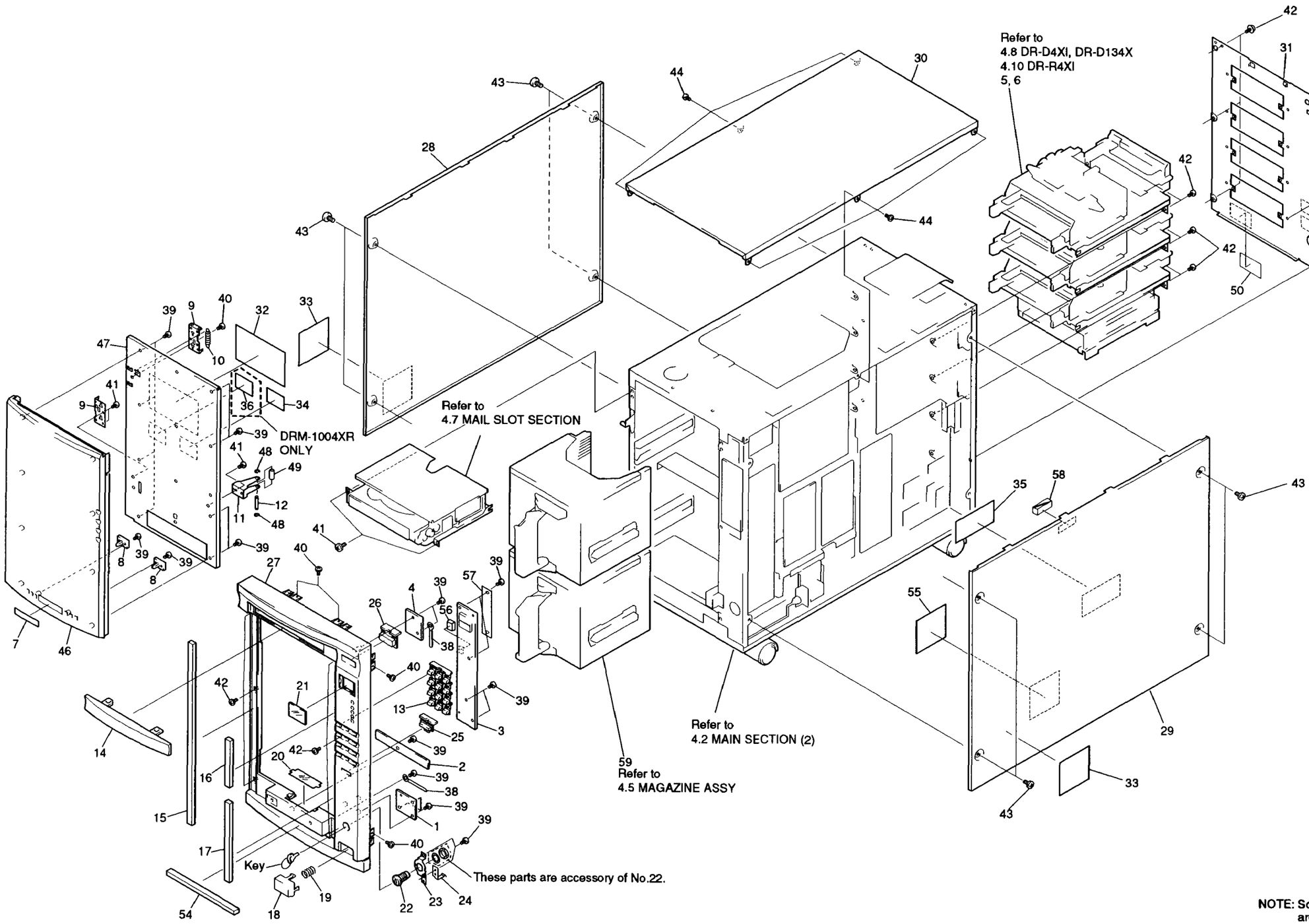
(1) CONTRAST OF DRM-1004X-4/IUC, DRM-1004X-2/IUCYV AND DRM-1004XR/IUCYV

DRM-1004X-4/IUC, DRM-1004X-2/IUCYV and DRM-1004XR/IUCYV have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.			Remarks
			DRM-1004X-4 /IUC	DRM-1004X-2 /IUCYV	DRM-1004XR /IUCYV	
	5	READER DRIVE Unit	DR-D4XI (× 4)	DR-D4XI (× 2)	DR-D4XI (× 2)	
	6	WRITER DRIVE Unit	Not used	Not used	DR-R4XI (× 1)	
	27	Front Panel Assy	DXA1802	DXA1802	DXA1806	
	36	Writer Label	Not used	Not used	DRW1806	
	37	Rear Plate	Not used	DNH2173 (× 2)	DNH2173 (× 1)	

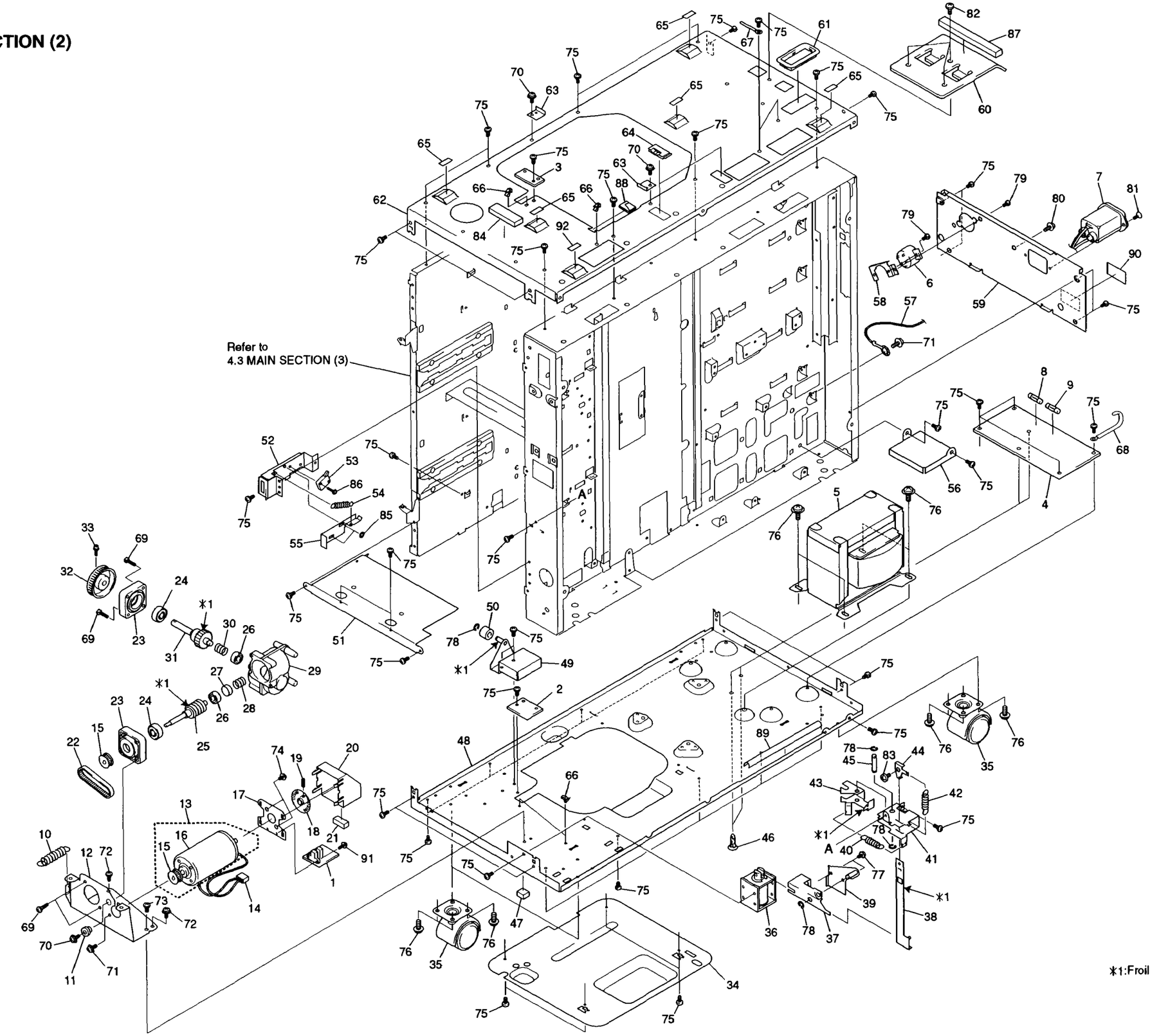
(2) PARTS LIST FOR DRM-1004X-4/IUC

Mark	No.	Description	Part No.
	1	KICB Unit	DWX1717
	2	PLED Unit	DWX1718
	3	KEYB Unit	DWX1711
	4	MOCB Unit	DWX1716
	5	READER DRIVE Unit	DR-D4XI
	6	• • • • •	
	7	Name Plate (P)	DAH1809
	8	Door Lens	DNK3282
	9	Hinge Holder	DNH2191
	10	Door Holder Spring	DBH1353
	11	Door Hook	DNH2192
	12	Hook Shaft	DLA1778
	13	Operate Button	DAC1859
	14	Tray Bezel	DNK3293
	15	Door Packing A	DEC2018
	16	Door Packing B	DEC2019
	17	Door Packing C	DEC2036
	18	Power Button	DAC1860
	19	Power Button Spring	DBH1350
	20	Panel Cover	DEC2012
	21	Display Window	DAH1827
	22	Key Assy	DXC1004
	23	Key Holder Plate	DNF1537
	24	Earth Spring	DBK1079
	25	Door Button Assy	DXA1803
	26	Tray Button	DAC1857
	27	Front Panel Assy	DXA1802
	28	Side Panel L	DNE1329
	29	Side Panel R	DNE1330
	30	Top Panel	DNE1328
	31	Rear Panel A	DNC1427
	32	Error Code Label	DRW1796
	33	Caster Lock Label	DRW1837
NSP	34	Label (Paper)	VRW-348
	35	65 Label	ORW1069
	36	• • • • •	
	37	• • • • •	
	38	Cord Clamper	RNH-184
	39	Screw	BPZ30P080FCU
	40	Screw	ABZ30P060FMC
	41	Screw	BBZ30P060FMC
	42	Screw	BBZ30P080FZK
	43	Screw	BBT40P080FNI
	44	Screw	BBT30P060FZK
	45	Disc Pad (D)	RED1038
	46	Door Panel	DNK3280
	47	Door Stay	DNH2197
	48	Washer	YE30FUC
	49	Roller	DLA1279
	50	Caution Label	DRW1813
	51	Caution Label	DRW1811
	52	Caution Label	DRW1812
	53	• • • • •	
	54	Door Packing D	DEC2063
	55	Insulation Sheet (180 × 100)	DEC2048
NSP	56	Spacer	VEC-244
	57	KEYB Cover	DEC2050
	58	Gasket	DEC1943
	59	Magazine Assy (Service)	VXX2353



NOTE: Screws adjacent to ▼ mark on the product are used for disassembly.

4.2 MAIN SECTION (2)



(1) CONTRAST OF DRM-1004X-4/IUC, DRM-1004X-2/IUCYV AND DRM-1004XR/IUCYV

DRM-1004X-4/IUC, DRM-1004X-2/IUCYV and DRM-1004XR/IUCYV have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.			Remarks
			DRM-1004X-4 /IUC	DRM-1004X-2 /IUCYV	DRM-1004XR /IUCYV	
	59	Rear Panel B	DNC1428	DNC1434	DNC1433	

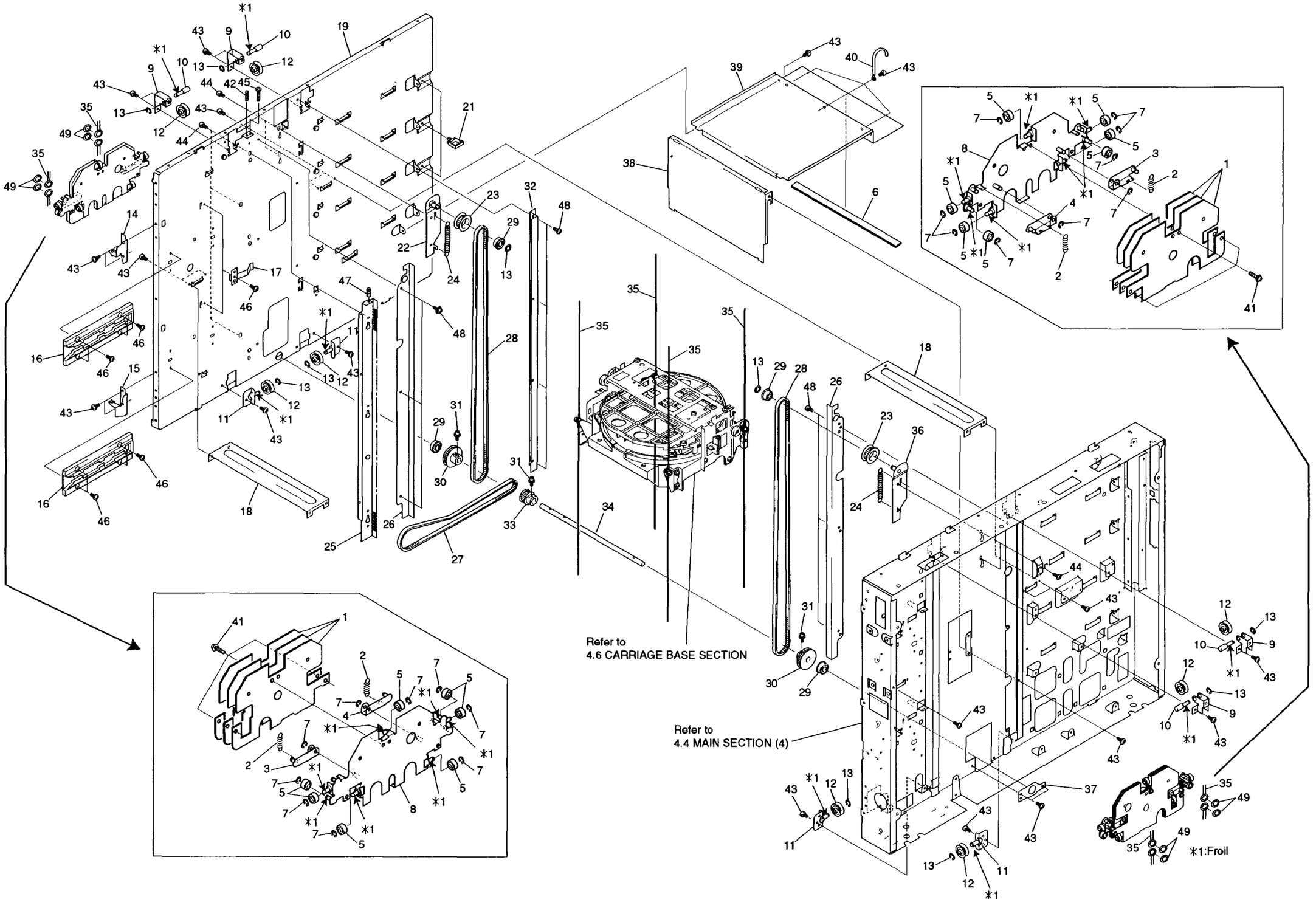
(2) PARTS LIST FOR DRM-1004X-4/IUC

Mark	No.	Description	Part No.
	1	ENCB Unit	DWX1725
	2	MDO2 Unit	DWX1715
	3	MDO1 Unit	DWX1714
	4	PWR1 Unit	DWR1254
⚠	5	Power transformer(T201)	DTT1134
⚠	6	Voltage Selector	DSB1015
⚠	7	AC Inlet	DTF1080
⚠	8	Fuse(FU202 : T3.15A)	REK1027
⚠	9	Fuse(FU201 : 5A)	DEK1079
	10	D Belt Spring	DBH1333
	11	Motor Sleeve	DLA1787
	12	VD Motor Fixing Plate	DNF1543
	13	VD Motor Assy	DXX2338
	14	Connector Assy	DKP3274
	15	Motor Pulley	DNK3265
⚠	16	VD Motor	DXM1086
	17	VME Plate	DNH1268
	18	Encoder Disc Assy	DXB1160
	19	Screw	ZMD26H030FBT
	20	Motor Cover	RNK2068
	21	M Cushion	DEC2021
	22	S2M Belt (L120)	DMS1033
	23	Frange	DNK3062
	24	Bearing	DXB1609
	25	Worm Gear Assy	DLA1763
	26	Bearing	DXB1026
	27	Bearing Holder	DLA1418
	28	GB Spring	DBH1148
NSP	29	Gear Box	DNS1181
	30	Worm Wheel Spring	DBH1364
	31	Worm Wheel Assy	DLA1675
	32	D Pulley W	DNK3266
	33	Bolt	DBA1099
	34	Bottom Plate	DNH2172
	35	Caster S	DXB1622
⚠	36	Plunger	DXP1044
NSP	37	Lock Lever	DNH1654
	38	Link Plate Assy	DXB1612
	39	Plunger Base	DNH2196
	40	Spring A	DBH1080
	41	Lock Base	DNH2200
	42	Lock Screw	DBH1351
	43	Lock Arm	DNH2199
NSP	44	Stopper S	DNH1279
	45	Hook Shaft	DLA1778
	46	Locking Card Spacer	VEC1596
	47	Disc Guard	PNM1245
NSP	48	Under Chassis	DNA1199
	49	Idler Plate Assy	DXB1592
	50	Idler	DLM1027
	51	Under Cover	DNF1530
	52	Door Switch Holder Assy	DXB1613
⚠	53	Slide Switch (Door)	DSK1007
	54	Door Switch Spring	DBH1352
	55	Door Switch Plate	DNH2198
	56	Caster Barrier	DNH2219
⚠	57	Earth Lug Assy	DDX1153
	58	SW Fixing Plate	VNE1211
	59	Rear Panel B	DNC1428
	60	Rear Handle	DNH2170
NSP	61	Protector	DNK1340
NSP	62	Upper Chassis	DNA1200
	63	H Stopper	DNH2186
NSP	64	Clamp	DEC2026
	65	Stopper Rubber	DEB1288
NSP	66	Mini Clamp	VEC1597
	67	Cord Clamper	RNH-184
NSP	68	Cord Stopper	DNF1128
	69	Screw	BBZ30P160FMC
	70	Screw	AMZ30P080FMC
	71	Screw	PMB30P060FMC
	72	Screw	BMZ30P040FNI
	73	Screw	DBA1020
	74	Screw	AMZ30P060FMC
	75	Screw	BBZ30P060FMC
	76	Screw	ABZ40P080FMC
	77	Screw	BMZ26P040FMC
	78	E Ring	YE30FUC
	79	Screw	BBZ30P080FZK
	80	Screw	PMB40P080FMC
	81	Screw	CBZ30P080FZK
	82	Screw	BBT30P080FZK
	83	Rivet	VEC1178
	84	Spacer	DEB1224
	85	Washer	WT26D060D050
	86	Screw	AMZ26P080FMC
	87	Door Packing	DEC2018
	88	Edge Saddle	DEC1807
	89	Tape (124 × 10)	DED1117
	90	Caution Label	ORW1129
	91	Screw	AMZ20P060FMC
NSP	92	Mechanism Sheet	VEX1024

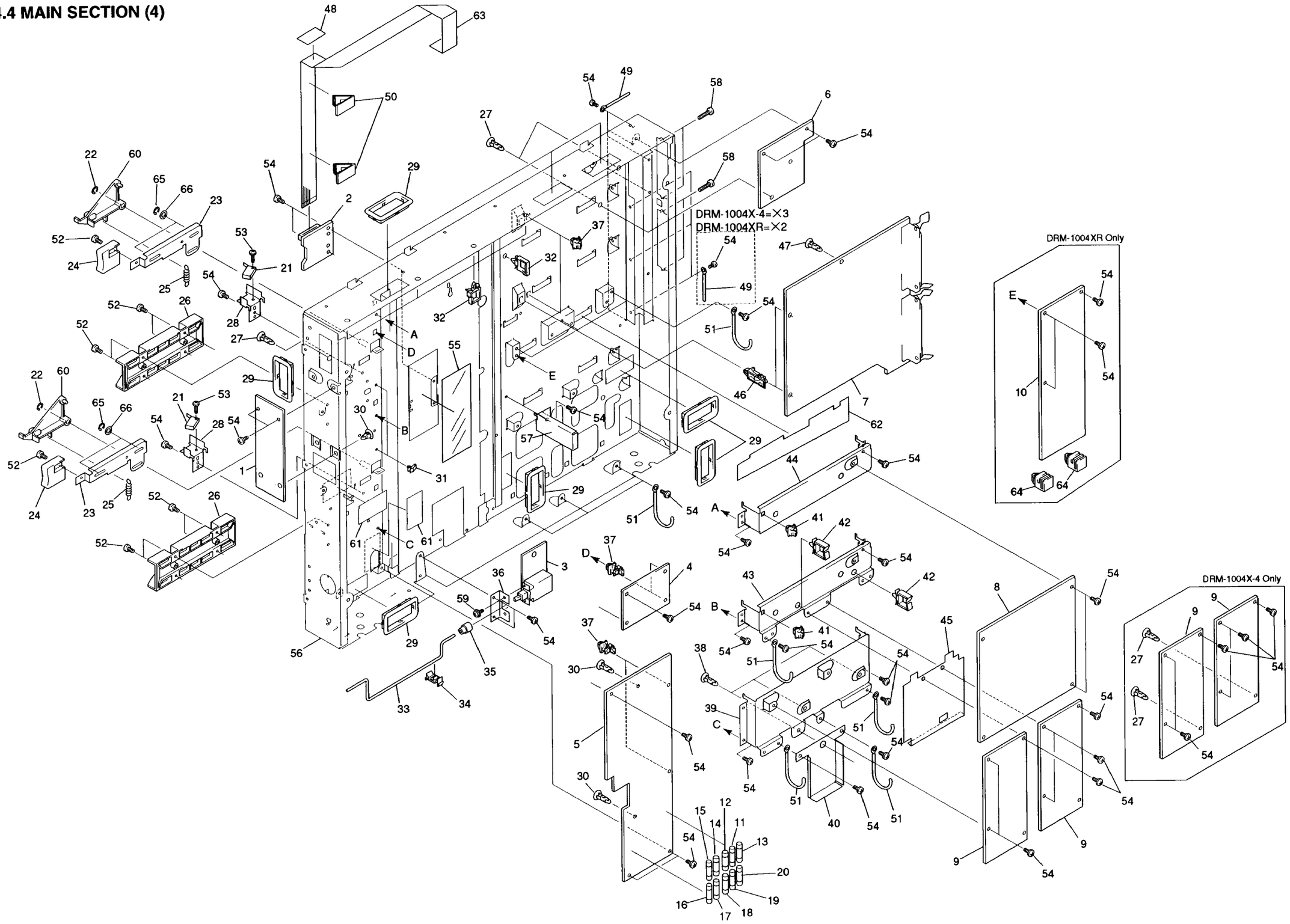
4.3 MAIN SECTION (3)

Parts List

Mark	No.	Description	Part No.
	1	Weight Plate	DNH2188
	2	WT Spring	DBH1335
	3	WT Plate R Assy	DXB1606
	4	WT Plate L Assy	DXB1605
	5	Weight Roller Assy	DXB1607
	6	Rear Packing A	DEC2064
	7	E Ring	YE25FUC
	8	Weight Base Assy	DXB1604
	9	WP Holder A	DNF1534
	10	WP Holder A Shaft	DLA1756
	11	WP Holder B Assy	DXB1603
	12	Wire Pulley	DNK3299
	13	E Ring	YE30FUC
	14	Door Hinge(A) Assy	DXB1630
	15	Door Hinge(B) Assy	DXB1631
	16	Slide Guide	DNK3244
	17	Rack Earth Plate	DBK1109
	18	Bridge	DND1195
NSP	19	Side Frame L Assy	DXB1590
	20	• • • • •	
NSP	21	Locking Wire Saddle	DEC1305
	22	UP Holder L Assy	DXB1601
	23	Upper Pulley	DNK3269
	24	S Belt Spring	DBH1334
	25	Encoder Plate	DNH2185
	26	FB Guide Plate	DNH2183
	27	S3M Belt(L459)	DMS1034
	28	S3M Belt(L870)	DMS1035
	29	Bearing	DXB1544
	30	Sync. Pulley	DNK3268
	31	Bolt	DBA1099
	32	LR Guide Plate	DNH2184
	33	D Pulley S	DNK3267
	34	Sync. Shaft	DLA1762
	35	Wire Assy	DXB1608
	36	UP Holder R Assy	DXB1602
	37	Bearing Holder	DNF1531
	38	Wall V	DNH2168
	39	Wall H	DNH2230
NSP	40	Cord Stopper	DNF1128
	41	Screw	AMZ30P080FMC
	42	Lock Screw	DBA1081
	43	Screw	BBZ30P060FMC
	44	Screw	BMZ30P040FNI
	45	Screw	BMZ26P120FMC
	46	Screw	BBZ30P080FZK
	47	E Plate Spring	DBH1332
	48	Screw	AMZ30P040FMC
	49	Washer	WT26D047D050


Refer to
4.6 CARRIAGE BASE SECTION
Refer to
4.4 MAIN SECTION (4)
*1:Froil

4.4 MAIN SECTION (4)



(1) CONTRAST OF DRM-1004X-4/IUC, DRM-1004X-2/IUCYV AND DRM-1004XR/IUCYV

DRM-1004X-4/IUC, DRM-1004X-2/IUCYV and DRM-1004XR/IUCYV have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.			Remarks
			DRM-1004X-4 /IUC	DRM-1004X-2 /IUCYV	DRM-1004XR /IUCYV	
	9	PWRB Assy	DWR1266 (× 4)	DWR1266 (× 4)	DWR1266 (× 2)	
	10	PWRB Assy	Not used	Not used	DWR1251 (× 1)	
	64	PC Support	Not used	Not used	DEC1324 (× 2)	

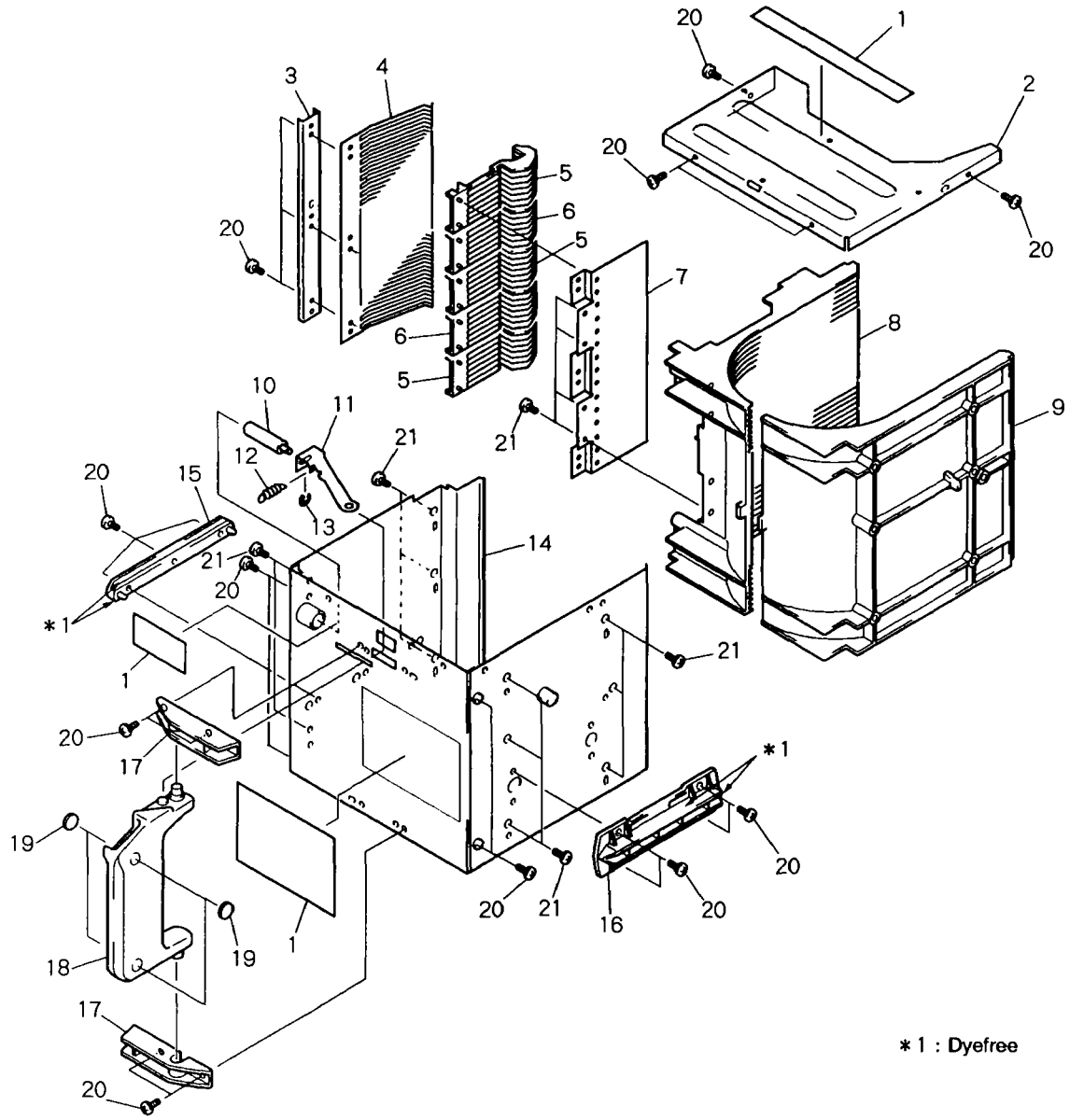
(2) PARTS LIST FOR DRM-1004X-4/IUC

Mark	No.	Description	Part No.
	1	SSB1 Unit	DWX1712
	2	FCNB Unit	DWX1705
	3	PWSB Unit	DWR1256
	4	SSB2 Unit	DWX1713
	5	PWR2 Unit	DWR1255
	6	IDSB Unit	DWX1719
	7	MMCB Unit	DWX1704
	8	VMDB Unit	DWX1724
	9	PWRB Assy	DWR1266
	10	• • • • •	
⚠	11	Fuse(FU256 : T315mA)	REK1017
⚠	12	Fuse(FU254 : T315mA)	REK1017
⚠	13	Fuse(FU258 : T5A)	REK1029
⚠	14	Fuse(FU252 : T2.5A)	REK1026
⚠	15	Fuse(FU260 : T2A)	REK1025
⚠	16	Fuse(FU259 : 2A)	REK1078
⚠	17	Fuse(FU251 : 2.5A)	REK1079
⚠	18	Fuse(FU253 : 630mA)	VEK1011
⚠	19	Fuse(FU255 : 630mA)	VEK1011
⚠	20	Fuse(FU257 : 6.3A)	REK1085
	21	Slide Switch	DSH1011
	22	E Ring	YE30FUC
	23	Release Arm	DNH2166
	24	Release Knob	DNK3242
	25	DS Lock SP	RBH1358
	26	Rack Rail	DNK3323
	27	PCB Holder	PNW1861
	28	Rack SW Holder	DNH2165
NSP	29	Protector	DNK1340
NSP	30	PCB Holder	PNW1706
NSP	31	Mini Clamp	VEC1597
	32	Locking Wire Saddle	DEC1717
	33	Power Switch Rod	DLA1748
	34	Shaft Holder	DNK2414
	35	Joint Cap	DEB1057
	36	Power Button Holder	DNE1311
NSP	37	Pierce Hold	REC1219
	38	Locking Card Spacer	ONK1035
	39	PCB Stay C	DNF1526
	40	PSWB Sheet	DEC1998
	41	Pierce Hold	DEC1230
	42	Wire Saddle	DEC1299
	43	PCB Stay B	DNF1525
	44	PCB Stay A	DNF1524
	45	PWRB Sheet C	DEC2042
	46	Card Edge Spacer	DEC1472
NSP	47	PCB Holder	PNW2029
NSP	48	Mechanism Sheet	VEX1024
	49	Cord Clamper	RNH-184
NSP	50	Clamp	DEC2026
NSP	51	Cord Stopper	DNF1128
	52	Screw	BBZ30P080FZK
	53	Screw	PMH20P080FMC
	54	Screw	BBZ30P060FMC
	55	PWRB Sheet A	DEC2013
NSP	56	Side Frame R Assy	DXB1591
	57	PCB Protector	DNH2171
	58	Screw	PMZ30P100FNI
	59	Screw	PMB30P060FMC
	60	Magazine Lock Arm	DNK3243
	61	Sheet	DEC1939
	62	PWRB Sheet B	DEC2014
	63	Flexible Cord B	DDD1101
	64	• • • • •	
	65	E Ring	YE20FUC
	66	Washer	WT32D080D050

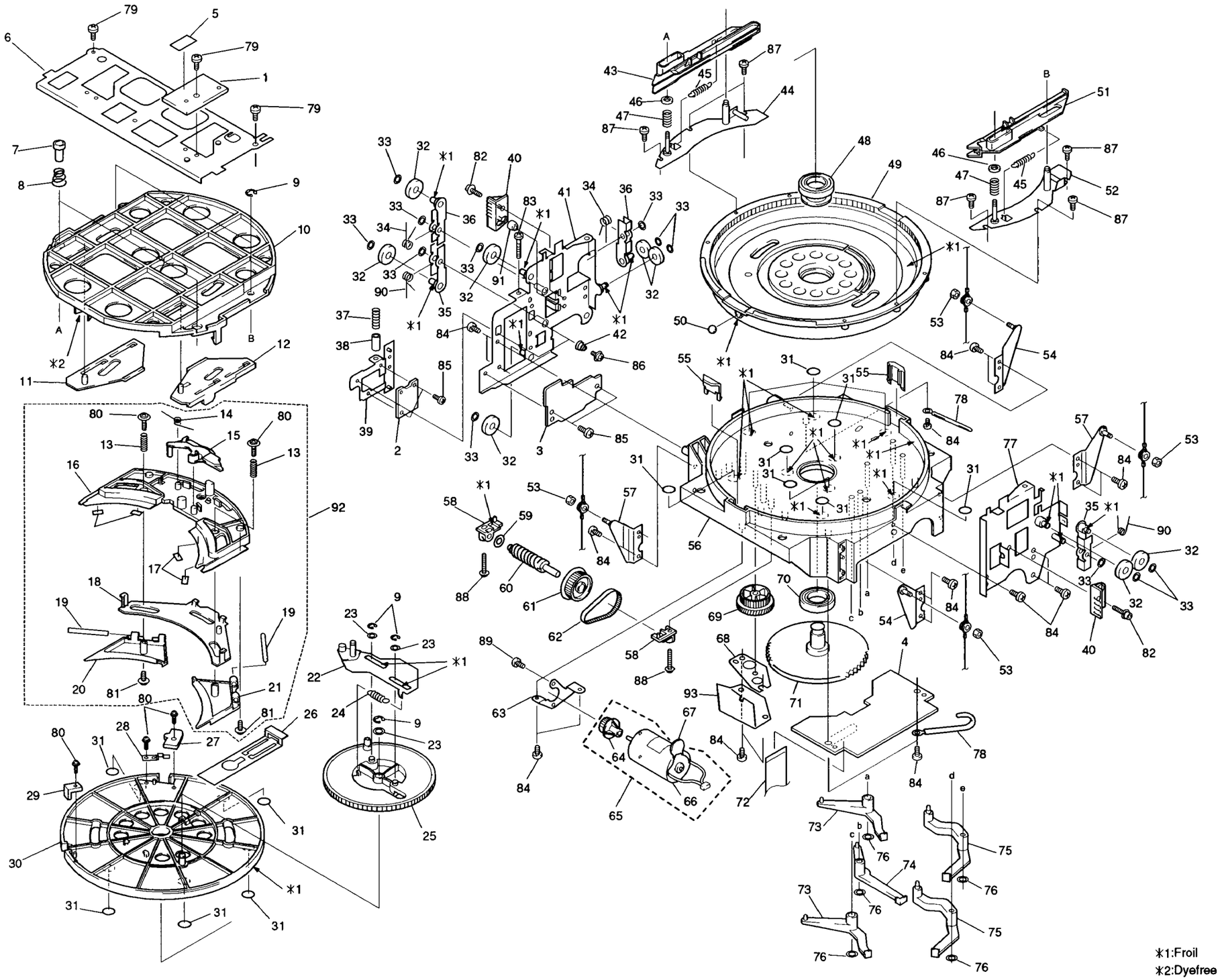
4.5 MAGAZINE ASSY (DXX2353)

Parts List

Mark	No.	Description	Part No.
	1	Magazine Label	DRW1830
	2	Rack Base(B)	DNH2163
	3	Spring Holder	DNH2164
	4	Holder Stopper	RBK1049
	5	Disc Holder W	RNK2107
	6	Disc Holder R	RNK2108
	7	Holder Plate	RNE1616
	8	Disc Rack(L)	DNK3240
	9	Disc Rack(R)	DNK3241
	10	Catch Pin	DLA1735
	11	Catch Plate	DNH2167
	12	Catch Plate Spring	DBH1349
	13	E Ring	YE20FUC
	14	Rack Base(A) Assy	DXB1621
	15	Slide Rail	DNK3245
	16	DS Side Rail	DNK3324
	17	Grip Holder	DNK3247
	18	Grip	DNK3246
	19	LD Pad(Large)	VEC1472
	20	Screw	BBZ30P080FZK
	21	Screw	BPZ30P080FCU



4.6 CARRIAGE BASE SECTION



Parts List

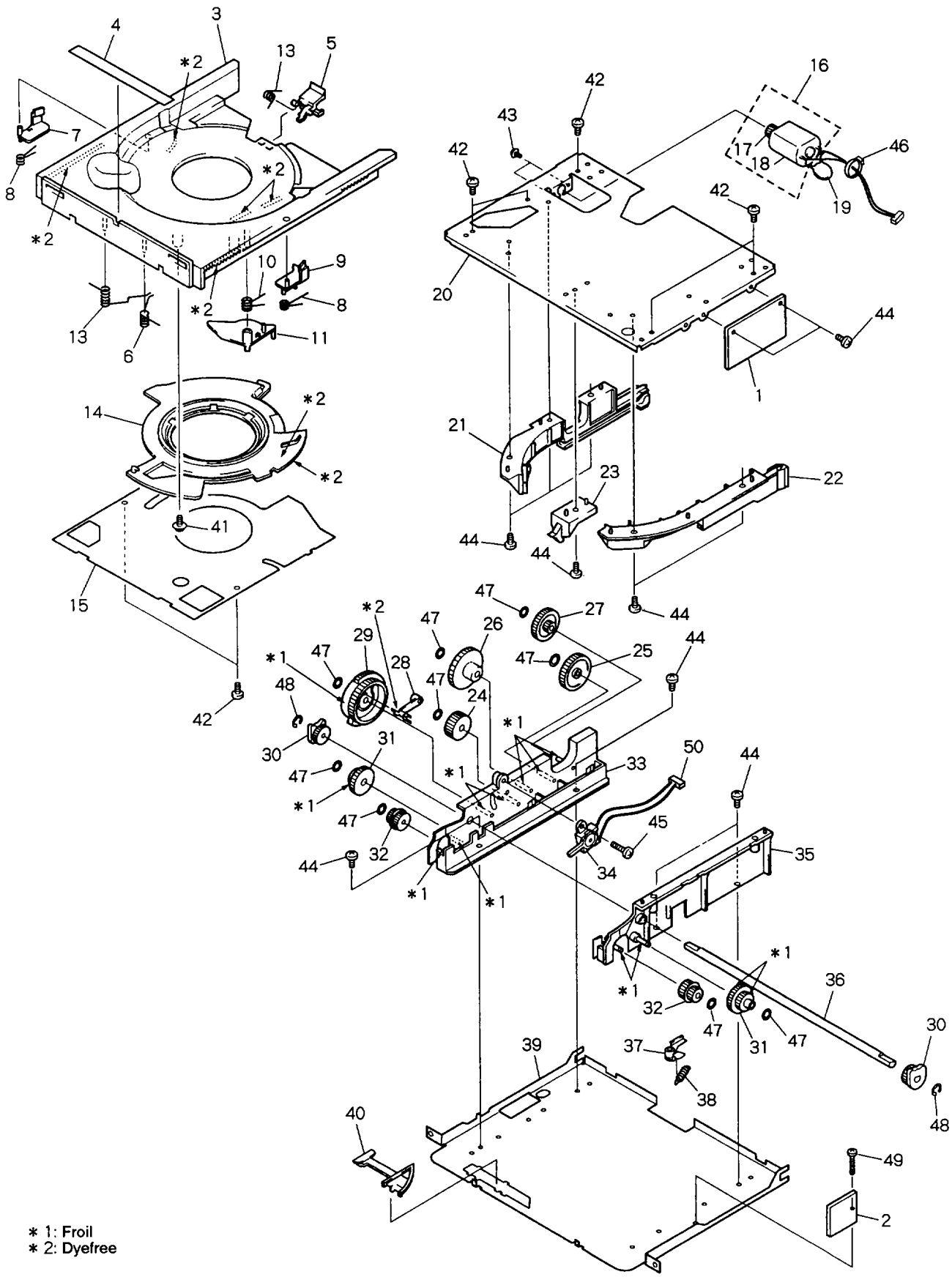
Mark	No.	Description	Part No.
	1	DSEB Unit	DWX1707
	2	UPSE Unit	DWX1709
	3	DNSE Unit	DWX1708
	4	DCMB Unit	DWX1706
	5	Damp Sheet	VEX1021
	6	Sensor Stay	DNH2205
	7	DG Height Pin	DLA1773
	8	D Guide Spring 2	RBH1352
	9	E Ring	YE25FUC
	10	Upper Plate	DNK3252
	11	Upper Slider L	DNK3274
	12	Upper Slider R	DNK3275
	13	Chuck Spring 1	DBH1336
	14	D Release Spring	DBH1337
	15	D Release Arm	DNK3264
	16	Chuck 1	DNK3260
	17	Rubber Sheet(100)	DEB1339
	18	Chuck Cam	DNK3263
	19	Chuck 2 Guide Shaft	DLA1772
	20	Chuck 2(L)	DNK3261
	21	Chuck 2(R)	DNK3262
	22	Arm Assy	DXB1616
	23	Washer	WA41D065D050
	24	Spring	DBH1338
	25	Gear	DNK3259
	26	Lock Plate	DBK1106
(i-078151)	27	Inner Piece(A) (B)	DNK3361
	28	Ball Pressure	DBK1107
	29	Inner Piece(A)	DNK3360
	30	Inner Table	DNK3251
	31	Sheet	DEC2000
	32	Guide Roller	DLM1028
	33	Washer	WT31D054D050
	34	Guide Spring A	DBH1328
	35	Guide Plate B Assy	DXB1597
	36	Guide Plate A Assy	DXB1596
	37	Phase ADJ. Spring	DBH1331
	38	Bush	DLM1029
	39	Phase ADJ. Plate Assy	DXB1598
	40	Belt Stopper	DNK3298
	41	Side Plate L assy	DXB1594
	42	ADJ. Plate Spring	DBH1330
	43	D Guide L	DNK3272
	44	DG Base(R) Assy	DXB1615
	45	D guide Spring 3	DBH1340
	46	D Guide Sleeve	DNK3284
	47	D Guide Spring 1	DBH1339
	48	Bearing	DXB1617
	49	Outer Table	DNK3250
	50	Steel Ball(6)	VNX1002
	51	D Guide R	DNK3273
	52	DG Base(L) Assy	DXB1614
	53	Nut	NN30FUC
	54	Wire Fixing Plate B Assy	DXB1600
	55	Ball Catcher	DNK3285
	56	Carriage Base	DNK3249
	57	Wire Fixing Plate A Assy	DXB1599
	58	Worm Stay	RNK2054
	59	Washer	WC40S
	60	Worm Gear S	DLA1270
	61	S2M Pulley L	DNK1390
	62	P2M Belt(L84)	DMS1036
	63	Motor Stay 2	DNH1417
	64	S2M Pulley(18)	DNK3270
	65	Loading Motor Assy-S	DXX2337
	66	DC Motor	DXM1037
	67	Capacitor(C1)	CFTXA224J50
	68	HS Support	DNH2201
	69	SW Worm Wheel	DNK1842
	70	Bearing	DXB1618
	71	H Cam Gear	DNK3258
	72	Flexible Cord A	DDD1100
	73	SW Arm B	DNK3277
	74	SW Arm A	DNK3276
	75	SW Arm C	DNK3278
	76	Washer	WT26D047D050
	77	Side Plate R Assy	DXB1595
	78	Cord Clamper	RNH-184
	79	Screw	BBZ30P060FMC
	80	Screw	IPZ20P050FMC
	81	Screw	BPZ26P060FZK
	82	Bolt	VLL-378
	83	Screw	BMZ26P160FMC
	84	Screw	BPZ30P080FCU
	85	Screw	BMZ26P040FMC
	86	Screw	PBA-125
	87	Screw	PPZ26P080FMC
	88	Screw	IPZ30P160FMC
	89	Screw	PMA30P040FCU
	90	Guide Spring B	DBH1329
	91	Bush	DNK3318
	92	Chuck Assy (Service)	DXX2348
	93	Worm Cover	DEC2062

4.7 MAIL SLOT SECTION

Parts List

Mark	No.	Description	Part No.
	1	MSTB Unit	DWX1720
	2	MSDB Unit	DWX1721
	3	Tray	DNK3317
	4	Tray Caution Label	DRW1804
	5	Stopper	DNK3311
	6	Stopper Lever Spring 1	DBH1346
	7	Disc Holder TL	DNK3313
	8	DH Spring	DBH1347
	9	Disc Holder TR	DNK3314
	10	DSL Spring 1	DBH1344
	11	DS Lever 1	DNK3306
	12	Stopper Spring	DBH1343
	13	Stopper Lever Spring 2	DBH1348
	14	Stopper Lever	DNK3308
	15	Tray Under Cover	DEC2002
	16	Clamp Motor Assy-S	DXX2336
	17	Motor Gear	DNK3254
NSP	18	Motor	PXM1002
	19	Capacitor(C2)	CFTXA224J50
	20	U Base	DNH2208
	21	Guide L	DNK3304
	22	Guide R	DNK3305
	23	Guide S	DNK3294
	24	Gear 5	DNK3295
	25	Gear 7	DNK3297
	26	Gear 6	DNK3296
	27	CL Gear(A)	DNK3363
	28	Tray Switch Lever	DNK3312
	29	Cam Gear(T)	DNK3309
	30	Cam F Gear	DNK3310

Mark	No.	Description	Part No.
	31	Gear 2	DNK3316
	32	Gear 1	DNK3315
	33	Rail(L) Assy	DNK3302
	34	Lever Switch	DSK1003
	35	Rail(R) Assy	DNK3303
	36	Tray Sync. Shaft	DLA1776
	37	DS Lever 2	DNK3307
	38	DSL Spring 2	DBH1345
	39	Mechanism Base	DNH2209
	40	Tray Selector	DNK3300
	41	Screw	IPZ30P080FMC
	42	Screw	BPZ30P080FCU
	43	Screw	PMH20P040FMC
	44	Screw	BBZ30P060FMC
	45	Screw	BPZ26P080FMC
	46	Binder(SKB-90BK)	Z09-056
	47	Washer	WT26D047D050
	48	E Ring	YE30FUC
	49	Screw	PMH20P100FMC
	50	Connector Assy	DKP3280

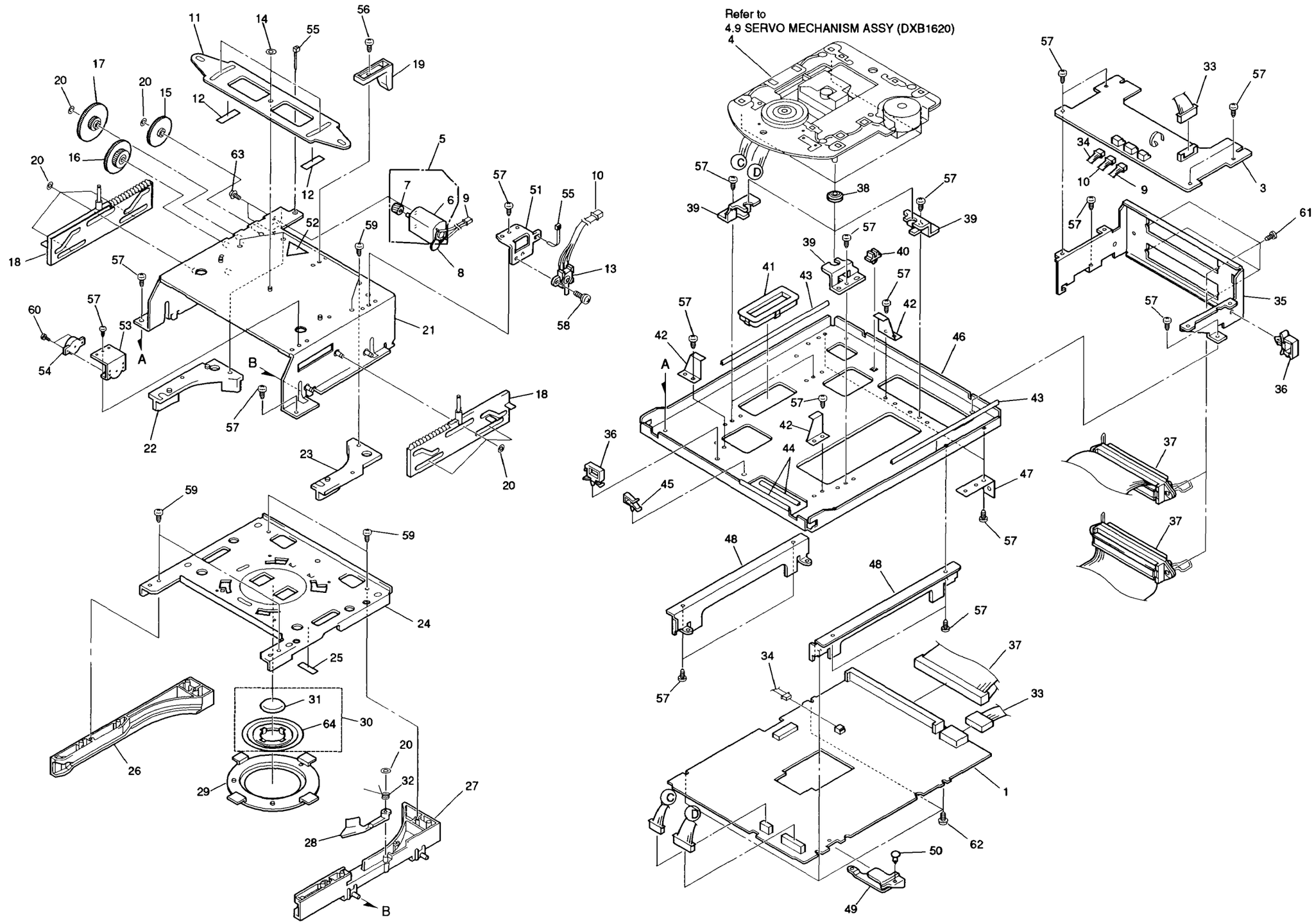


* 1: Froil
* 2: Dyefree

4.8 READER DRIVE UNIT (DR-D4XI)

Parts List

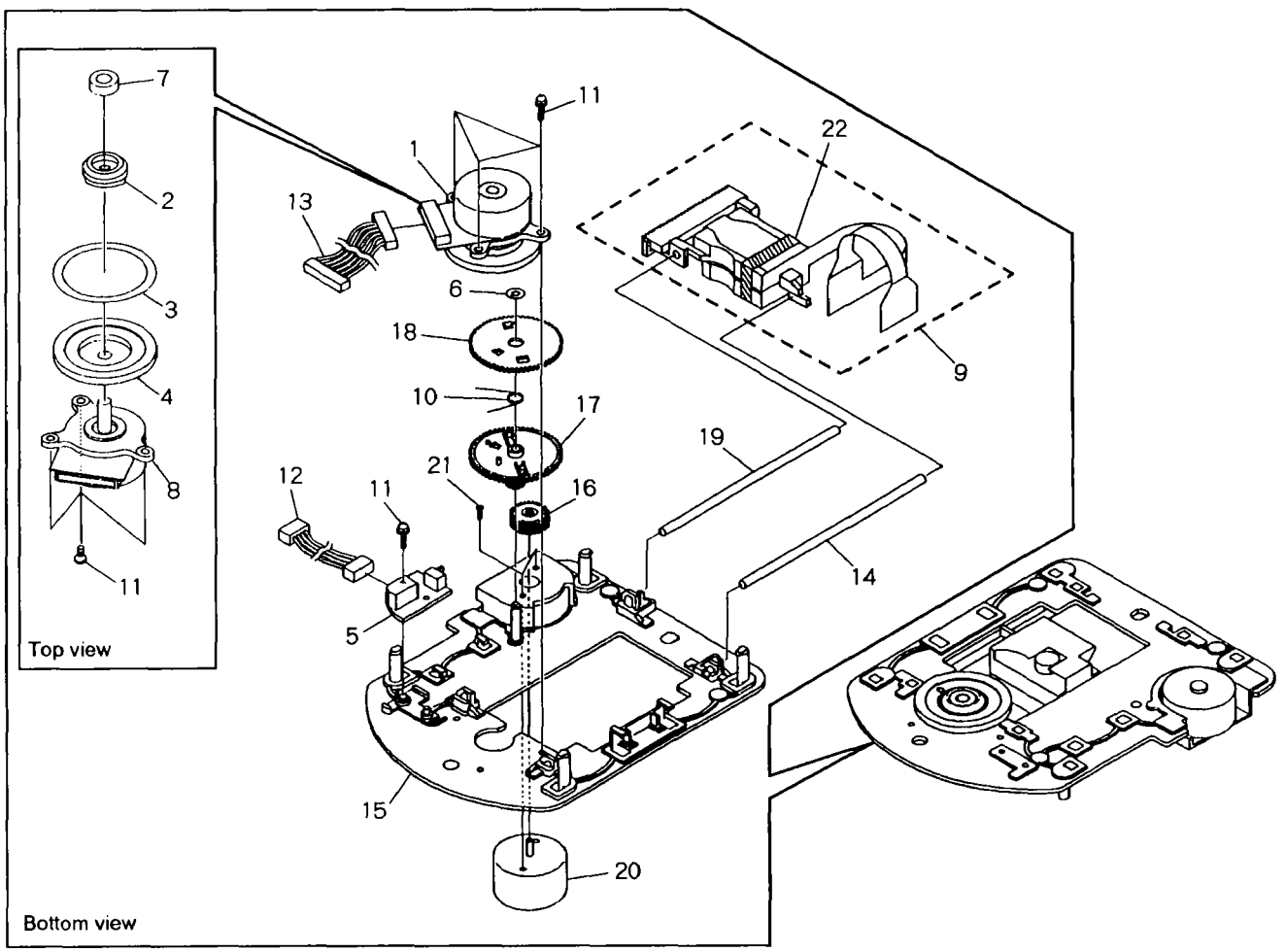
Mark	No.	Description	Part No.
	1	MOTHER Unit	DWX1674
	2	• • • • •	
	3	RIWB Unit	DWX1701
	4	Servo Mechanism Assy	DXB1620
	5	Clamp Motor Assy-S	DXX2336
NSP	6	Motor	PXM1002
	7	Motor Gear	DNK3254
	8	Capacitor(C1)	CFTXA224J50
	9	Connector Assy	PF02PY-B15
	10	Connector Assy	DKP3281
	11	Joint Arm	DNH2207
	12	Slide Sheet	DEC2034
	13	Lever Switch	DSK1003
	14	Washer	WT36D072D050
	15	CL Gear(A)	DNK3363
	16	CL Gear(C)	DNK3257
	17	CL Gear(B)	DNK3256
	18	Rack Plate	DNK3292
	19	Disc Stopper	DNK3291
	20	Washer	WT26D047D050
	21	Clamper Base	DNH2206
	22	Disc Holder(L)	DNK3289
	23	Disc Holder(R)	DNK3290
	24	Clamper Stay A	DND1196
	25	Disc Holder Sheet	DEC2006
	26	Side Rack(L)	DNK3364
	27	Side Rack(R)	DNK3365
	28	CL Disc Holder	DNK3253
	29	Clamper Bracket	DNK3286
	30	Clamper Assy	DXA1752
NSP	31	Clamper Plate	DNE1289
	32	Disc Holder Spring	DBH1342
	33	Connector Assy	DKP3283
	34	Connector Assy	DKP3282
	35	Terminal Plate A	DNC1429
NSP	36	Locking Wire Saddle	DEC1305
	37	Connector Assy 50P	DKP3284
	38	Float Rubber	DEB1315
	39	Mechanism Bracket	DNF1538
	40	PCB Fixing Base	DEC1231
NSP	41	Protector	DNK1340
	42	Mechanism Stopper	DNF1542
	43	Tape	DED1117
	44	Tape	DED1122
	45	Clamp	DEC2007
	46	PL Base A	DNA1203
	47	PL Fixing Metal	DBK1108
	48	PL Angle	DNF1540
	49	Heat Sink(AL)	DNE1291
	50	Nylon Rivet	DEC-117
	51	Switch Bracket	DNF1539
	52	Caution Label(G)	VRW-329
	53	Damper Bracket	DNF1541
	54	Damper Assy	VXA1153
	55	Binder	ZCA-SKB90BK
	56	Screw	BBZ30P080FZK
	57	Screw	BBZ30P060FMC
	58	Screw	PMH26P060FMC
	59	Screw	BPZ30P080FCU
	60	Screw	PMA20P050FMC
	61	Screw	PMZ30P100FNI
	62	Screw	AMZ26P080FMC
	63	Screw	PMH20P040FM
NSP	64	Clamper	DNK3094


Refer to
4.9 SERVO MECHANISM ASSY (DXB1620)

4.9 SERVO MECHANISM SECTION (DXB1620)

Parts List

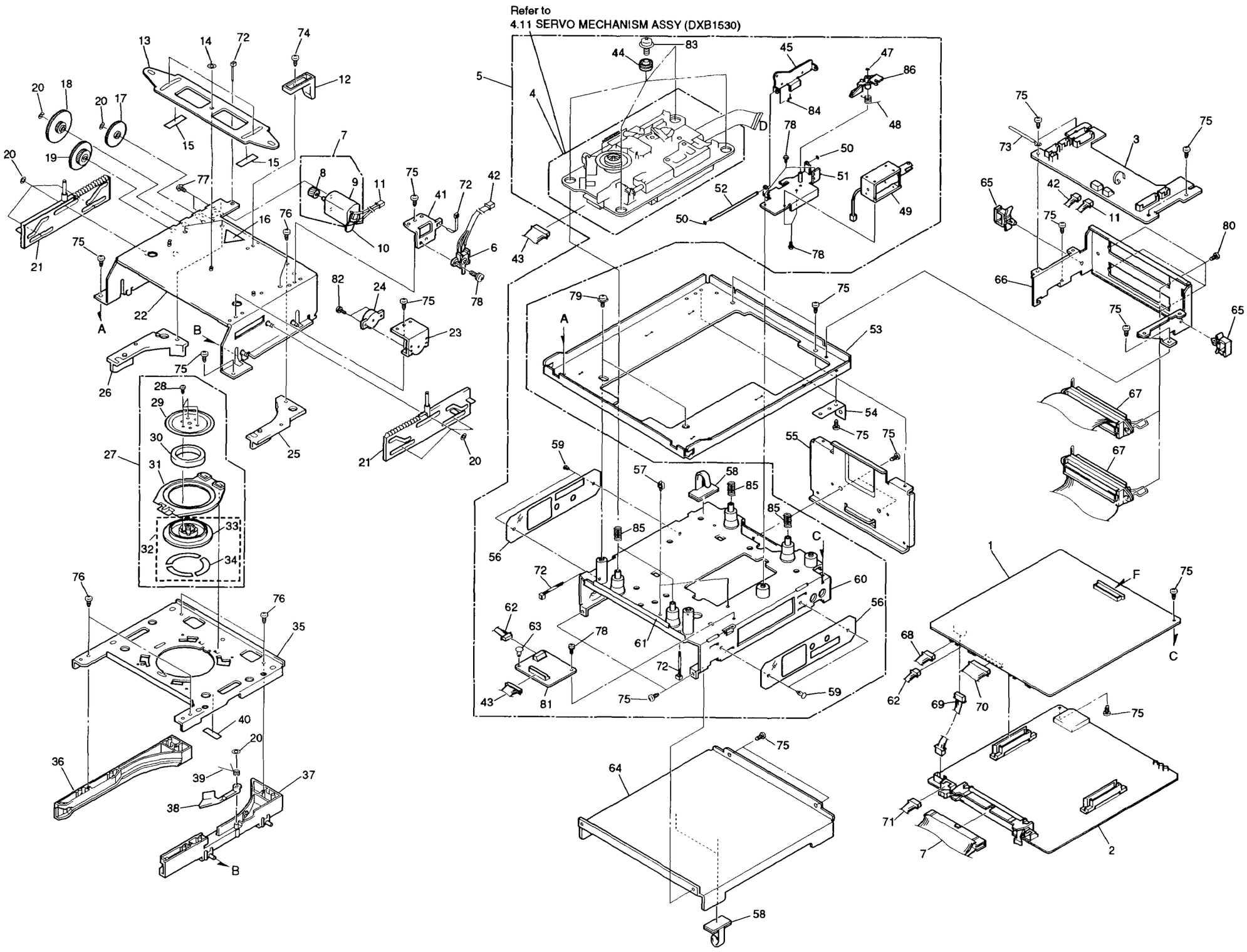
Mark	No.	Description	Part No.
	1	Spindle Motor Assy-S	DXX2266
NSP	2	Centering Hub	DLA1689
	3	Table Sheet	DEC1871
NSP	4	Disc Table	DNH2016
NSP	5	INSW Unit	DWS1246
	6	Washer	WT26D060D025
NSP	7	Magnet	DNS1186
NSP	8	Spindle Motor	DXM1073
	9	Pickup Assy-S	DXX2267
	10	Gear Spring	DBH1286
	11	Screw	PMA26P060FMC
	12	Connector Assy 4P	DKP3104
	13	Connector Assy 11P	DKP3105
	14	Sub Guide Bar	DLA1665
NSP	15	Mechanism Base	DNK3088
	16	Motor Pinion	DNK3090
	17	Gear A	DNK3092
	18	Gear B	DNK3093
	19	Guide Bar	PLA1094
	20	Motor(CARRIAGE)	DXM1077
	21	Screw	JGZ17P030FMC
	22	Tape	DED1123



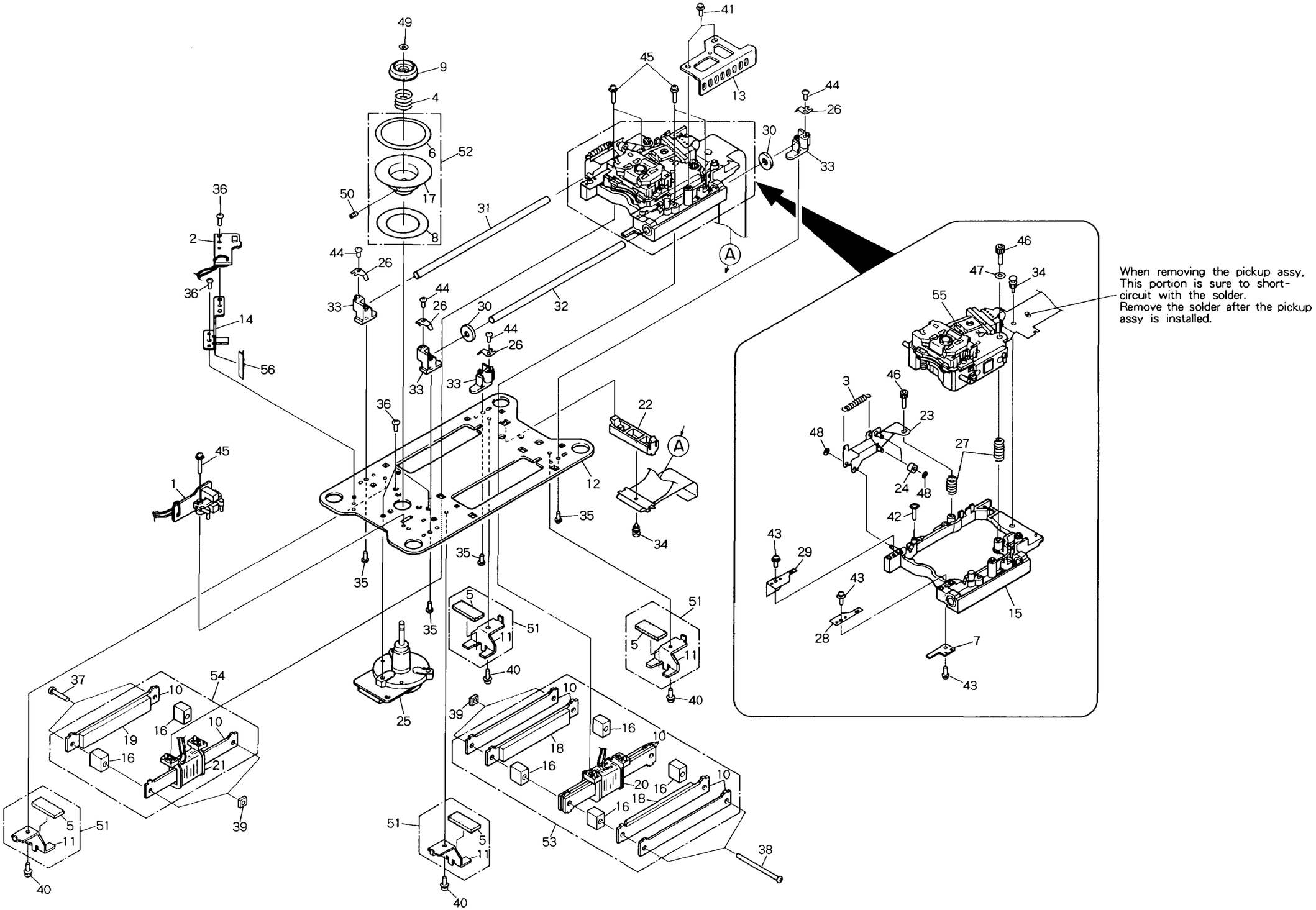
4.10 WRITER DRIVE UNIT (DR-R4XI)

Parts List

Mark	No.	Description	Part No.
	1	HEAD Unit	DWX1699
	2	MAIN Unit	DWX1700
	3	WIFB Unit	DWX1702
	4	Servo Mechanism Assy	DXB1530
	5	WRITER Unit-S	DXX2335
	6	Lever Switch	DSK1003
	7	Clamp Motor Assy-S	DXX2336
	8	Motor Gear	DNK3254
NSP	9	Motor	PXM1002
	10	Capacitor(C1)	CFTXA224J50
	11	CN Assy	PF02PY-B15
	12	Disc Stopper	DNK3291
	13	Joint Arm	DNH2207
	14	Washer	WT36D072D050
	15	Slide Sheet	DEC2034
	16	Caution Label(G)	VRW-329
	17	CL Gear(A)	DNK3363
	18	CL Gear(B)	DNK3256
	19	CL Gear(C)	DNK3257
	20	Washer	WT26D047D050
	21	Rack Plate	DNK3292
	22	Clamper Base	DNH2206
	23	Damper Bracket	DNF1541
	24	Damper Assy	VXA1153
	25	Disc Holder(R)	DNK3290
	26	Disc Holder(L)	DNK3289
	27	Clamper Assy-S	DXX2270
	28	Screw	IPZ20P050FMC
	29	Yoke	RNE1627
NSP	30	C Magnet	PMF1017
	31	Clamper Retina	RNK1945
NSP	32	Clamp Cushion Assy	DXB1557
NSP	33	Clamper	DNK3108
	34	Clamp Cushion	DEC1517
	35	Clamper Stay B	DND1197
	36	Side Rack(L)	DNK3364
	37	Side Rack(R)	DNK3365
	38	CL Disc Holder	DNK3253
	39	Disc Holder Spring	DBH1342
	40	Disc Holder Sheet	DEC2006
	41	Switch Bracket	DNF1539
	42	Connector Assy	DKP3281
	43	Connector Assy(11P)	DKP3286
	44	Float Rubber	DEB1333
	45	Lock Plate B	DNH1986
	46	•••••	
	47	Washer	WT21D050D025
	48	LA Spring	DBH1281
	49	Solenoid	DXP1036
	50	Washer	WT16D032D025
	51	P Base	DNH1985
	52	LP Shaft	DLA1651
	53	PL Base B	DNA1204
	54	PL Fixing Metal	DBK1108
	55	Shield Stay	DND1198
	56	Protect Sheet	DEC1870
NSP	57	Cord Clamp S	DEC1574
NSP	58	Cord Keep	REF1001
NSP	59	Plastic Rivet	DEC1704
	60	RW Box	DNE1332
	61	Tape	DED1117
	62	Connector Assy(5P)	DKP2994
	63	Nylon Rivet	DEC1830
	64	Shield Base	DND1199
NSP	65	Locking Wire Saddle	DEC1305
	66	Terminal Plate B	DNC1430
	67	Connector Assy 50P	DKP3285
	68	Connector	PF04PP4B32
	69	Connector	PF04PP6B05
	70	Connector	PF09PP-C35
	71	Connector	PF05PP-B32
	72	Binder	ZCA-SKB90BK
	73	Cord Holder	RNH-184
	74	Screw	BBZ30P080FZK
	75	Screw	BBZ30P060FMC
	76	Screw	BPZ30P080FCU
	77	Screw	PMH20P040FMC
	78	Screw	PMH26P060FMC
	79	Screw	PMB30P080FMC
	80	Screw	PMZ30P100FN
	81	DRIVE Unit	DWX1552
	82	Screw	PMA20P050FMC
	83	Float Screw	DBA1072
	84	LP Spring	DBH1280
	85	Float Spring	DBH1282
	86	Lock Arm	DNK3051


Refer to
4.11 SERVO MECHANISM ASSY (DXB1530)

4.11 SERVO MECHANISM ASSY (DXB1530)


When removing the pickup assy, This portion is sure to short-circuit with the solder. Remove the solder after the pickup assy is installed.

Parts List

Mark	No.	Description	Part No.
	1	TOC Board Assy	DWX1538
	2	FG Board Assy	DWX1539
	3	Roller Holder Spring (SUS)	ABH7023
	4	Centering Spring	DBH1242
NSP	5	Cushion	DEB1302
	6	Table Sheet	DEC2005
	7	Shading Plate	DEC1825
NSP	8	Reflection Sheet	DEC1826
	9	Centering Hab	DLA1644
NSP	10	Yoke	DNH1974
NSP	11	Yoke Angle	DNH1975
NSP	12	Mechanism Base	DNH1976
NSP	13	Lock Plate	DNH1980
NSP	14	FG Angle	DNH2012
	15	Carriage Unit	DNS1174
NSP	16	Yoke Holder	DNS1175
NSP	17	Disc Table	DNS1176
NSP	18	Motor Magnet	DNS1177
NSP	19	Sensor Magnet	DNS1178
NSP	20	Motor Bobbin	DNV1025
NSP	21	Sensor Bobbin	DNV1026
	22	Flexible Holder	DNV1027
NSP	23	TAN Arm Unit	DXB1527
	24	Bearing	DXB1531
	25	Spindle Motor	DXM1071
	26	Shaft Holder Spring	PBH1136
	27	Skew Spring	PBH1155
	28	Plate Spring S	PBK1122
	29	Plate Spring L	PBK1123
	30	Stopper Rubber	PEB1035
	31	Guide Bar	PLA1026
	32	Guide Shaft	PLA1120
NSP	33	Shaft Holder	PNR1038
	34	Nylon Rivet	DEC1830
	35	Screw	BMZ20P040FZK
	36	Screw	BMZ26P040FMC
	37	Screw	BMZ30P160FMC
	38	Screw	BMZ30P350FMC
	39	Nut	NZ30FMC
	40	Screw	PMA26P040FMC
	41	Screw	PMB20P050FMC
	42	Screw	PMF20P050FMC
	43	Screw	PMH20P040FMC
	44	Screw	PMH20P050FZK
	45	Screw	PMH20P100FMC
	46	Screw	SMZ30H080FNI
	47	Washer	WC30FMC
	48	Washer	WT17D034D050
	49	Washer	WT26D047D025
	50	Screw	ZMD26H040FBT
	51	Yoke Angle Assy	DXX2237
	52	Disc Table Assy	DXX2238
	53	Linear Motor Assy	DXX2239
	54	Sensor Assy	DXX2240
	55	Pickup Assy	DXX2241
	56	Tape B	REH1003

4.12 PACKING

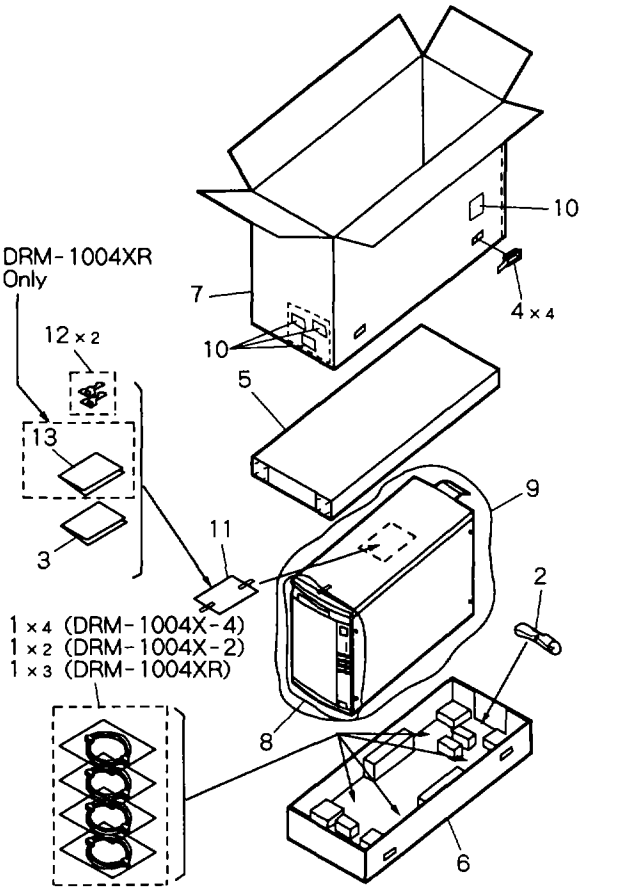
(1) CONTRAST OF DRM-1004X-4/IUC, DRM-1004X-2/IUCYV AND DRM-1004XR/IUCYV

DRM-1004X-4/IUC, DRM-1004X-2/IUCYV and DRM-1004XR/IUCYV have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.			Remarks
			DRM-1004X-4 /IUC	DRM-1004X-2 /IUCYV	DRM-1004XR /IUCYV	
	1	SCSI Cable	DDC1004 (× 4)	DDC1004 (× 2)	DDC1004 (× 3)	
	2	AC Power Cord	DDG1028	DDG1072	DDG1047	
	13	Recommended Disc List	Not used	Not used	DRY1173	

(2) PARTS LIST FOR DRM-1004X-4/IUC

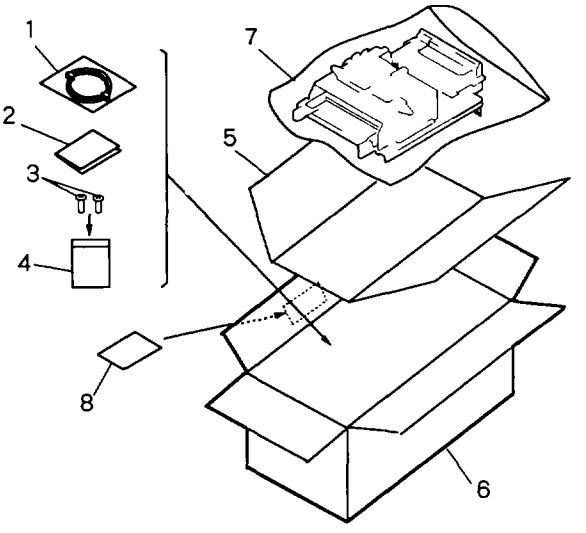
Mark	No.	Description	Part No.
	1	SCSI Cable	DDC1004
	2	AC Power Cord	DDG1028
	3	Operating Instructions (English/French/German/Japanese)	DRC1034
	4	PP Joint	AHG-204
	5	Pad (Upper)	DHA1364
	6	Pad (Under)	DHA1365
	7	Packing Case	DHG1731
	8	Mirror Mat	DHL1050
	9	Packing Bag	DHL1104
	10	Packing Case Label	DRW1807
	11	Polyethylene Bag	Z21-038
	12	Key (for Service)	DXX2333
	13	• • • • •	



4.13 PACKING FOR DR-D134X/ZUCYV/WL

Parts List

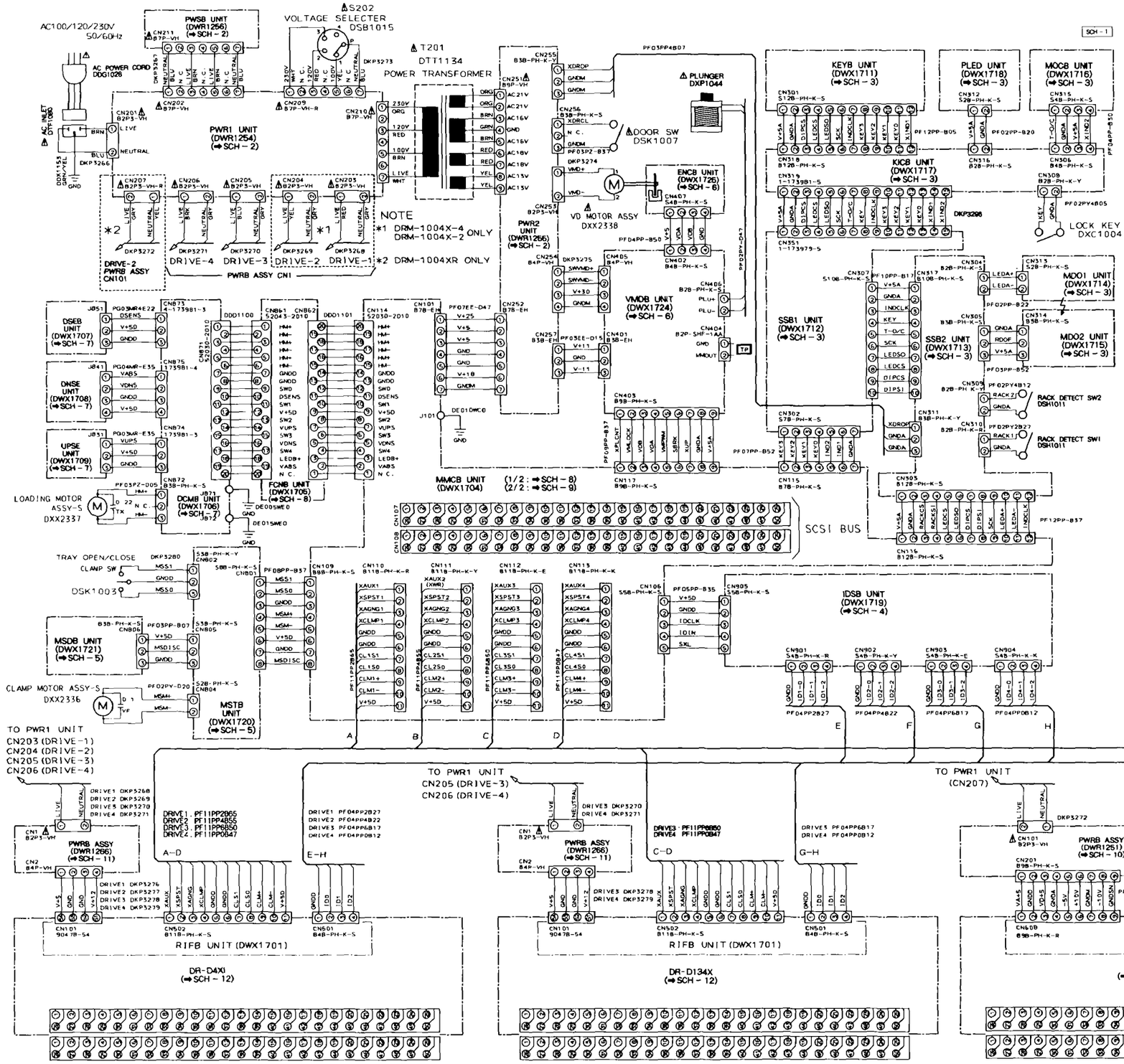
Mark	No.	Description	Part No.
	1	Screw	BBZ30P080FZK
	2	SCSI Cable	DDC1004
	3	Operating Instructions	DRM1194
NSP	4	Polyethylene Bag	Z21-002
	5	Pad	DHA1366
	6	Packing Case	DHG1732
	7	Bag	DHL1052
	8	Caution Label	VRM1044



5. SCHEMATIC AND PCB CONNECTION DIAGRAMS

● DRM-1004X-4, DRM-1004X-2 AND DRM-1004XR

5.1 OVERALL CONNECTIONS



OVERALL CONNECTIONS **SCH-1**

NOTE FOR SCHEMATIC DIAGRAMS (Type 4A)

1. **When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".**
2. **Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.**
3. **RESISTORS:**
   Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
   Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
   Tolerance:(F):±1%, (G):±2%, (K):±10%, (M):±20% or ±5% unless otherwise noted.
4. **CAPACITORS:**
   Unit : p:pF or μF unless otherwise noted.
   Ratings : capacitor (μF) / voltage (V) unless otherwise noted.
   Rated voltage : 50V except for electrolytic capacitors.
5. **COILS:**
   Unit : m:mH or μH unless otherwise noted.
6. **VOLTAGE AND CURRENT:**
   ▭ or ←V :
   DC voltage (V) in PLAY mode unless otherwise noted.
   ⇦mA or ←mA :
   DC current in PLAY mode unless otherwise noted.
   Value in ( ) is DC current in STOP mode.
7. **OTHERS:**
   - ⊘ or ⊘ : Adjusting point.
   - ◀ : Measurement point.
   - The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
8. **SCH-□ ON THE SCHEMATIC DIAGRAM:**
   - SCH-□ indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)
9. **SWITCHES** (Underline indicates switch position):

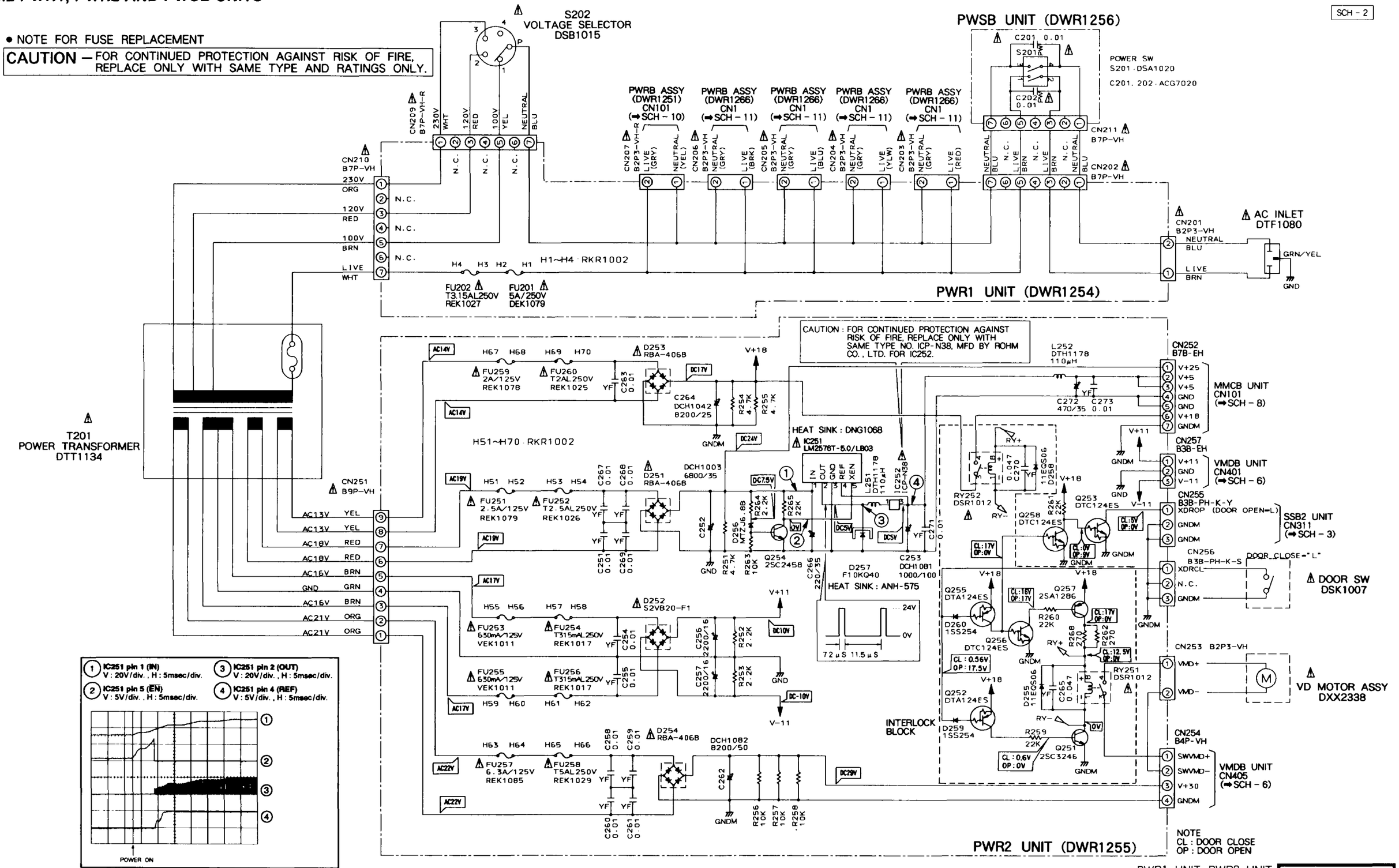
OUT OF UNIT	OUT OF READER UNIT
SLIDE SW : RACK SW1	LEAF SW : CLAMP SW
SLIDE SW : RACK SW2	
LOCK SW : LOCK KEY SW	MAIN UNIT
LEAF SW : TRAY OPEN/CLOSE	S1001-1 : BLKSZ
LEAF SW : TDOOR SW	S1001-2 : PARTY
	S1001-3 : TERM
KEYB UNIT	S1001-4 : MTCS
S351 : ENT	S1001-5 : TEST
S352 : 3	S1001-6 : TEST2
S353 : 6	
S354 : 9	WIFB UNIT
S355 : ESC	S601-1 : SCSI ID-1
S356 : 2	S601-2 : SCSI ID-2
S357 : 5	S601-3 : SCSI ID-3
S358 : 8	S601-4 : SCSI ID-4
S359 : 0	
S360 : 1	OUT OF WRITER UNIT
S361 : 4	LEAF SW : CLAMP SW
S362 : 7	
S363 : DOOR-OPEN	RIFB UNIT
	S501-1 : SCSI ID-1
PWSB UNIT	S501-2 : SCSI ID-2
S201 : POWER ON/OFF	S501-3 : SCSI ID-3
	S501-4 : SCSI ID-4
MOCB UNIT	S502-1 : TERM
S364 : TRAY-OPEN/CLOSE	S502-2 : BSIZ
	S503-1 : TEST
SSB1 UNIT	S503-2 : ——
S301 : FUNCTION SW	
IDSB UNIT	
S905 : SCSI ID	

5.2 PWR1, PWR2 AND PWSB UNITS

SCH - 2

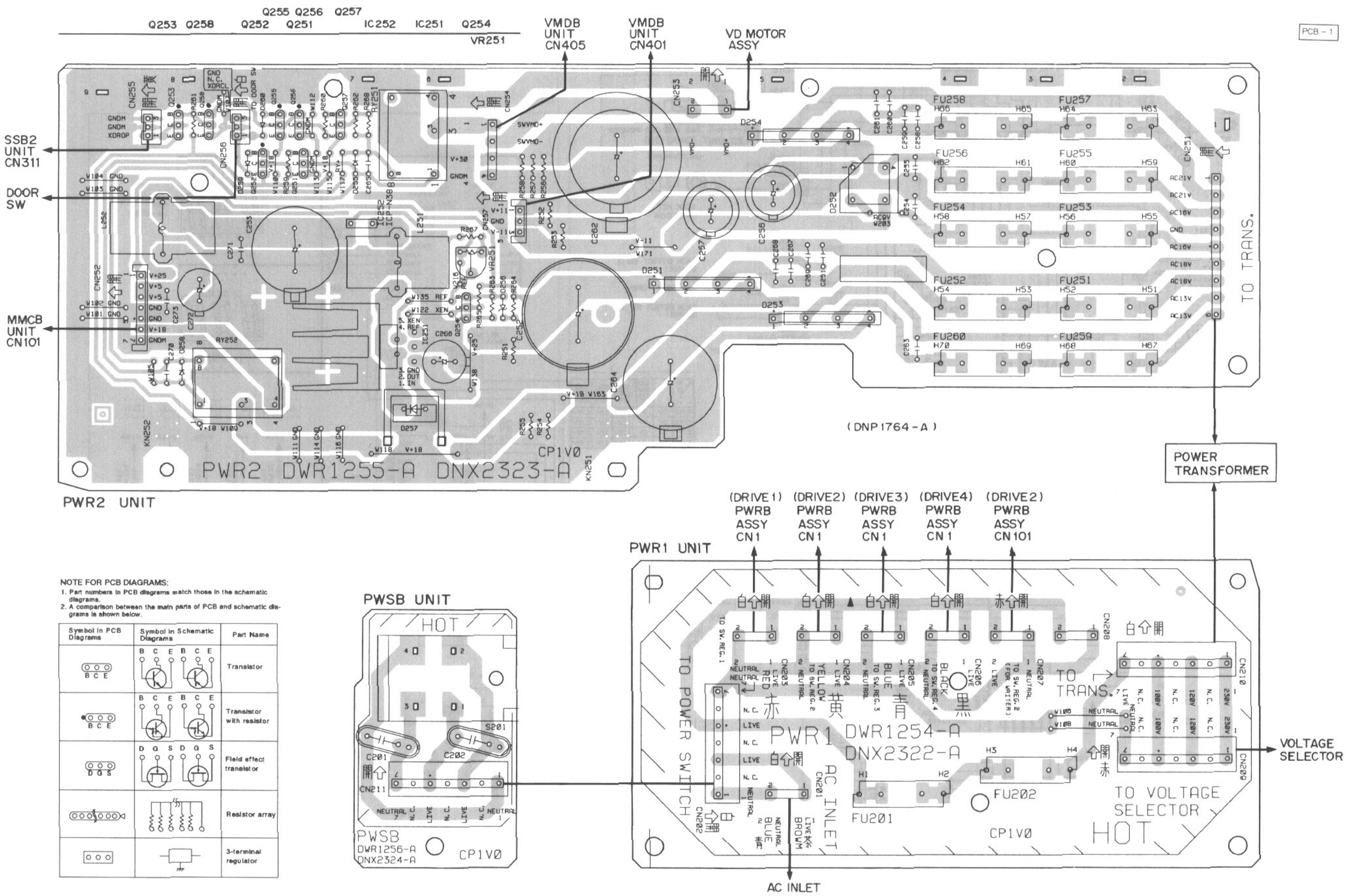
• NOTE FOR FUSE REPLACEMENT

CAUTION — FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE AND RATINGS ONLY.



SCH-2 PWR1 UNIT, PWR2 UNIT, PWSB UNIT

SCH-2 PWR1 UNIT, PWR2 UNIT, PWSB UNIT

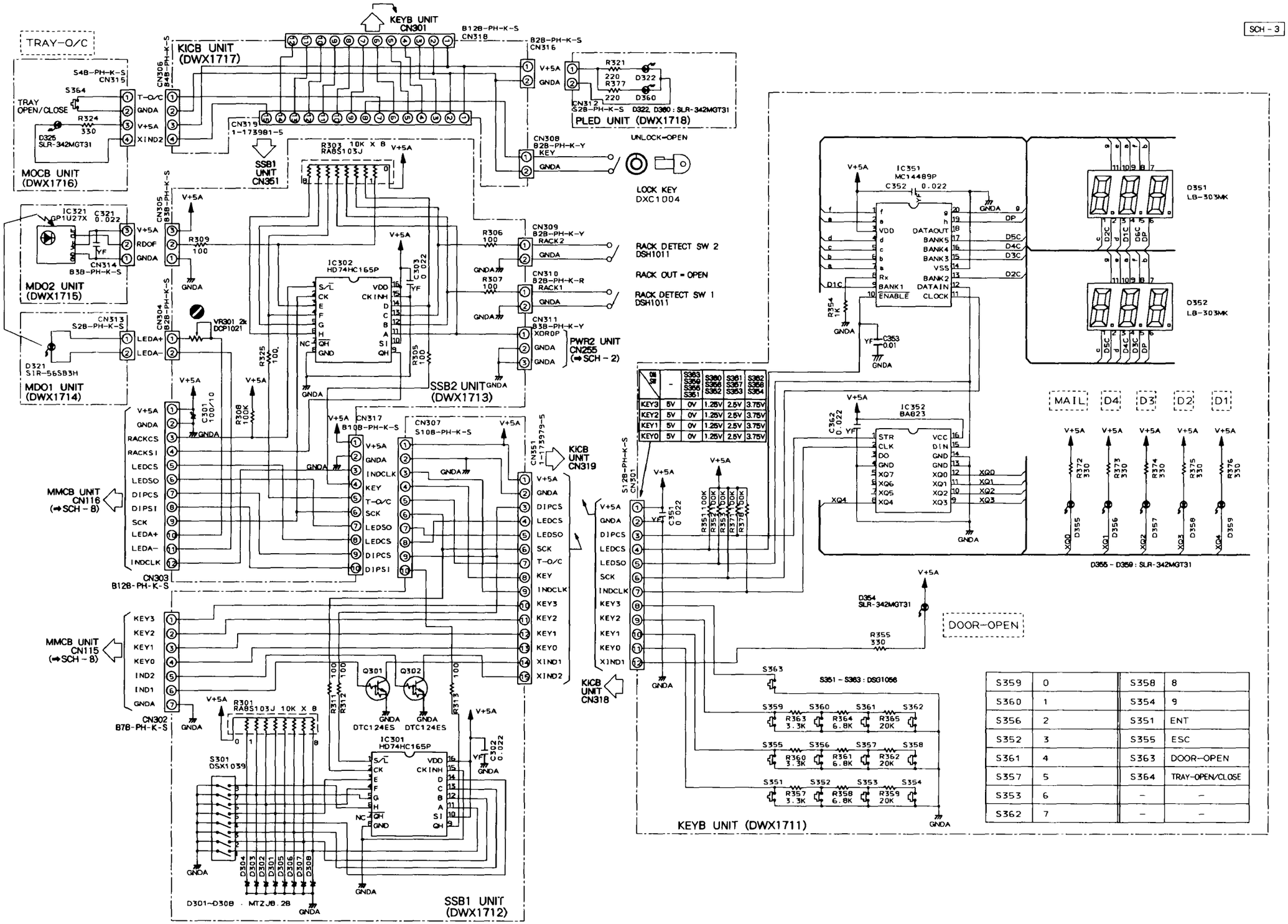


NOTE FOR PCB DIAGRAMS:
1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3-terminal regulator

- This diagram is viewed from the mounted parts side.
- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.

5.3 KEYB, SSB1, SSB2, MDO1, MDO2, MOCB, KICB AND PLED UNITS

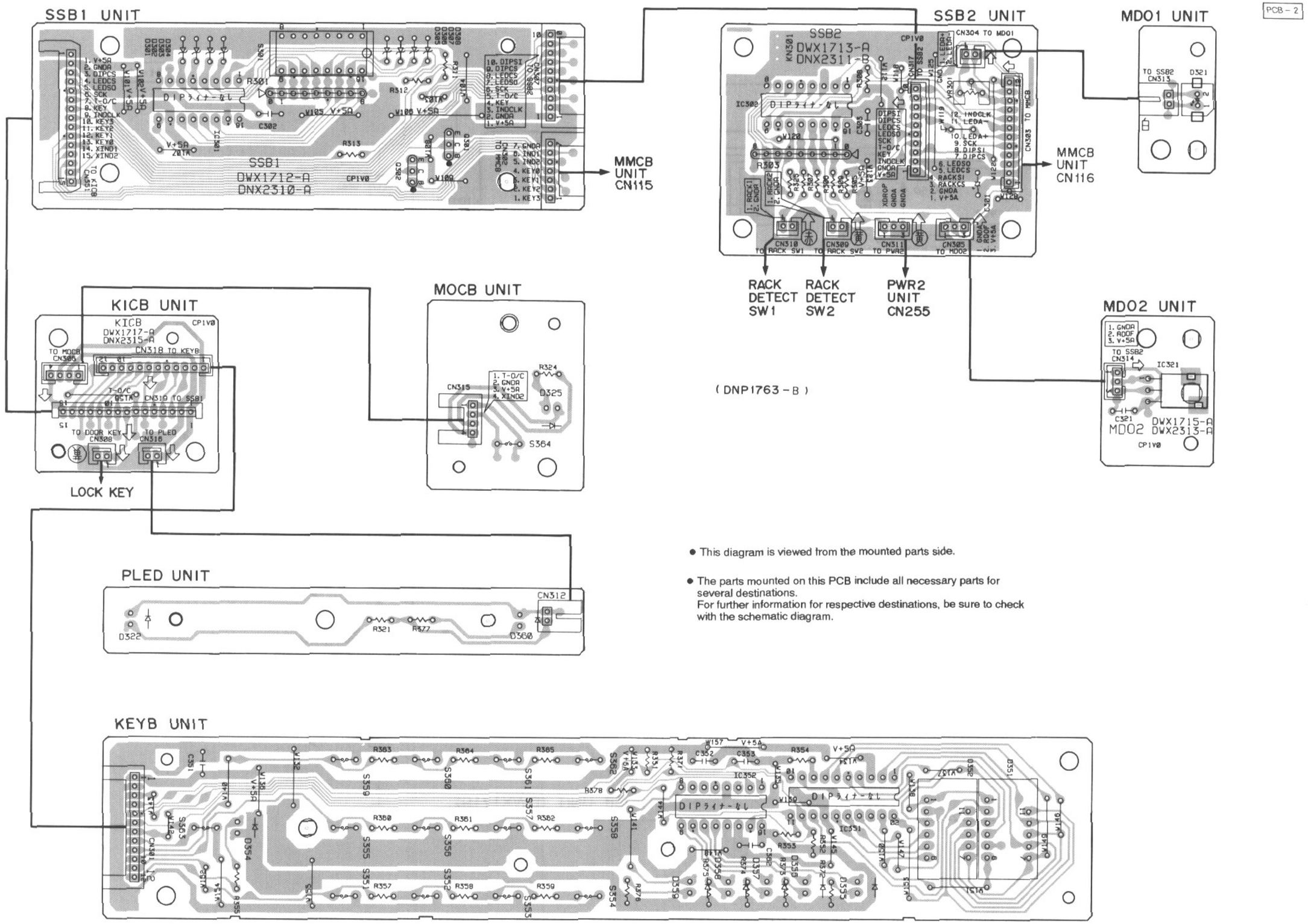


S359	0	S358	8
S360	1	S354	9
S356	2	S351	ENT
S352	3	S355	ESC
S361	4	S363	DOOR-OPEN
S357	5	S364	TRAY-OPEN/CLOSE
S353	6	–	–
S362	7	–	–

SCH-3 KEYB UNIT, SSB1 UNIT, SSB2 UNIT, MDO1 UNIT, MDO2 UNIT, MOCB UNIT, KICB UNIT, PLED UNIT

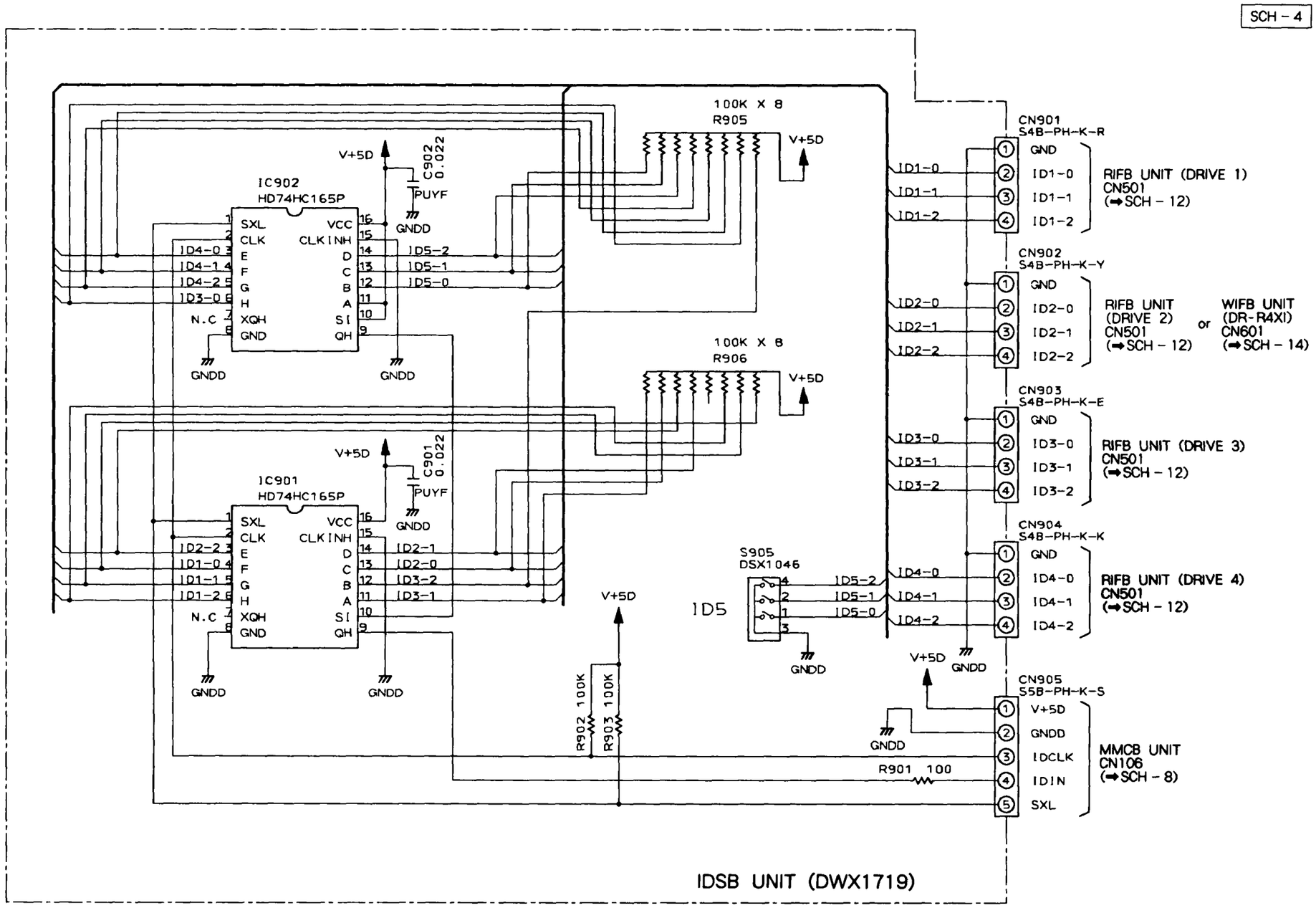
KEYB UNIT, SSB1 UNIT, SSB2 UNIT, MDO1 UNIT, MDO2 UNIT, MOCB UNIT, KICB UNIT, PLED UNIT **SCH-3**

PCB - 2



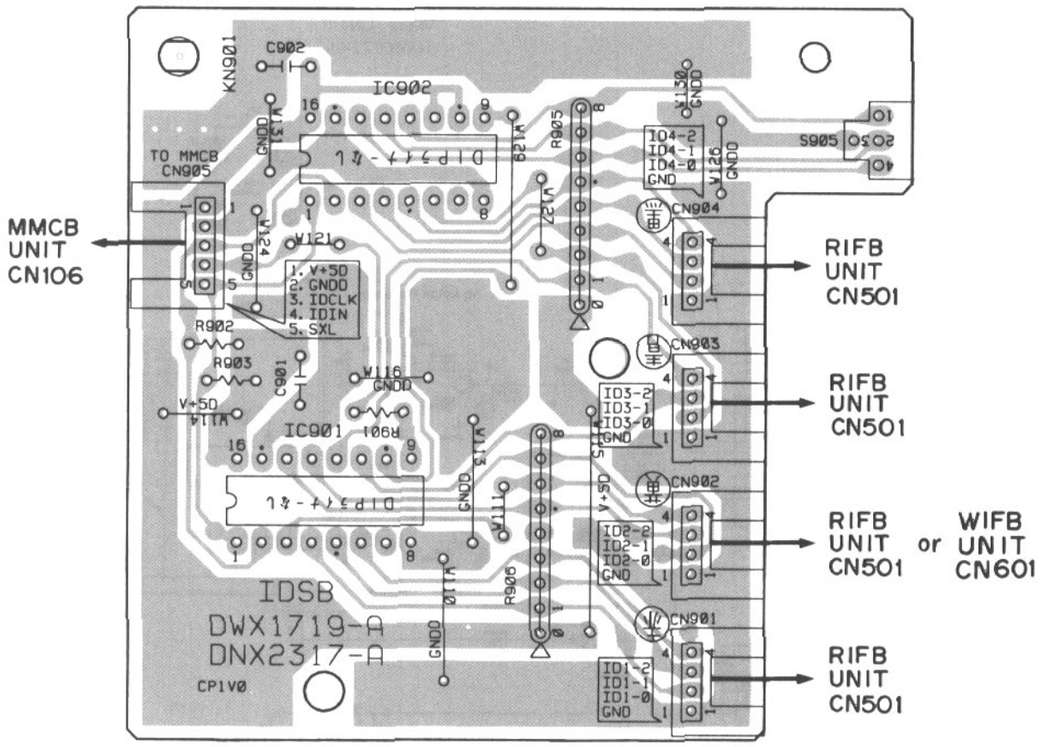
- This diagram is viewed from the mounted parts side.
- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.

5.4 IDSB UNIT


SCH - 4
IC902
HD74HC165P
IC901
HD74HC165P
V+5D
C902 0.022
C901 0.022
PUYF
GNDD
SXL
CLK
E
F
G
H
N.C
XQH
GND
VCC
CLK INH
D
C
B
A
SI
QH
ID4-0
ID4-1
ID4-2
ID3-0
ID2-2
ID1-0
ID1-1
ID1-2
ID5-2
ID5-1
ID5-0
ID2-1
ID2-0
ID3-2
ID3-1
100K X 8
R905
R906
R902 100K
R903 100K
S905
DSX1046
ID5
R901 100
CN901
S4B-PH-K-R
CN902
S4B-PH-K-Y
CN903
S4B-PH-K-E
CN904
S4B-PH-K-K
CN905
S5B-PH-K-S
RIFB UNIT (DRIVE 1)
CN501
(➡SCH - 12)
RIFB UNIT
(DRIVE 2)
CN501
(➡SCH - 12)
or
WIFB UNIT
(DR-R4XI)
CN601
(➡SCH - 14)
RIFB UNIT (DRIVE 3)
CN501
(➡SCH - 12)
RIFB UNIT (DRIVE 4)
CN501
(➡SCH - 12)
MMCB UNIT
CN106
(➡SCH - 8)
IDCLK
IDIN
SXL
IDSB UNIT (DWX1719)

PCB – 3

IDSB UNIT



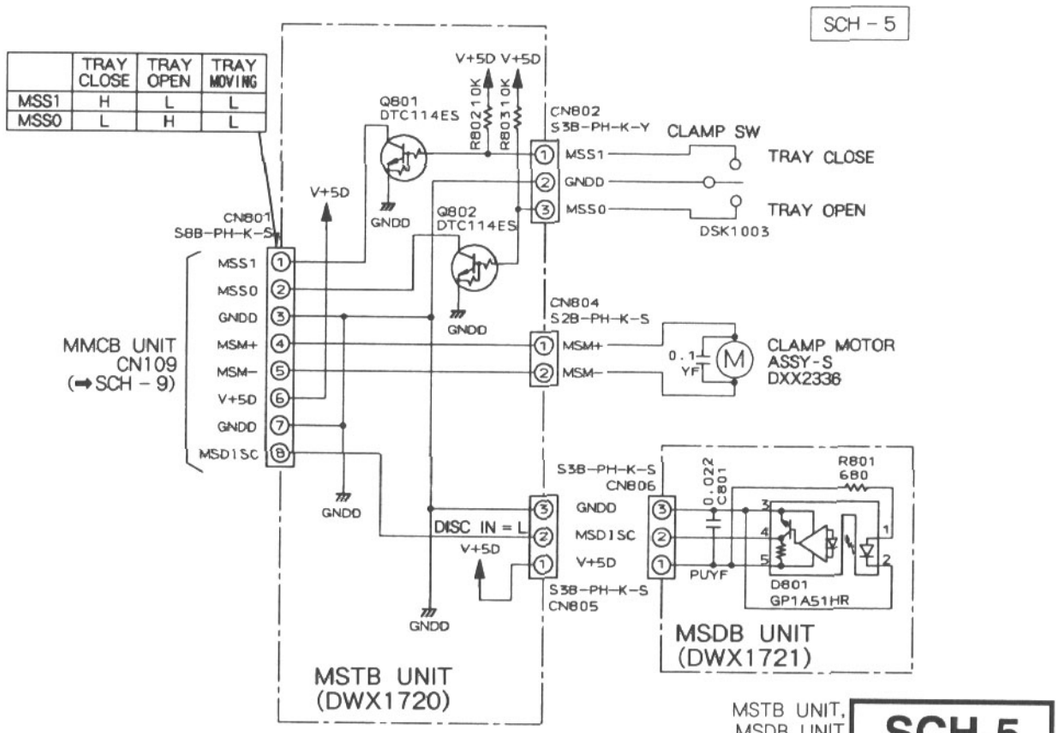
(DNP1763-A)

- This diagram is viewed from the mounted parts side.
- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.

5.5 MSTB AND MSDB UNITS

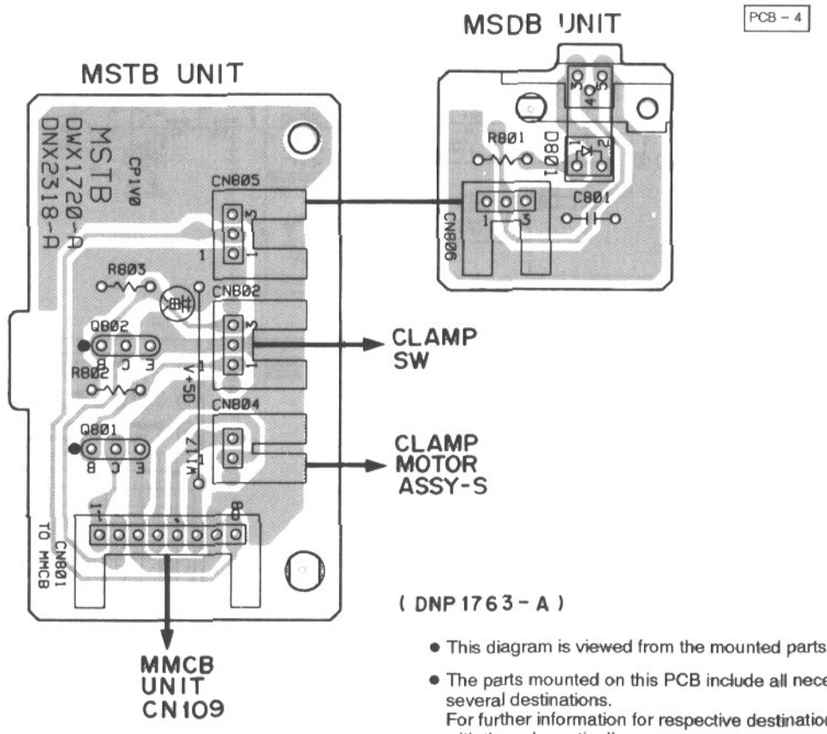
SCH – 5

	TRAY CLOSE	TRAY OPEN	TRAY MOVING
MSS1	H	L	L
MSS0	L	H	L



MSTB UNIT, MSDB UNIT **SCH-5**

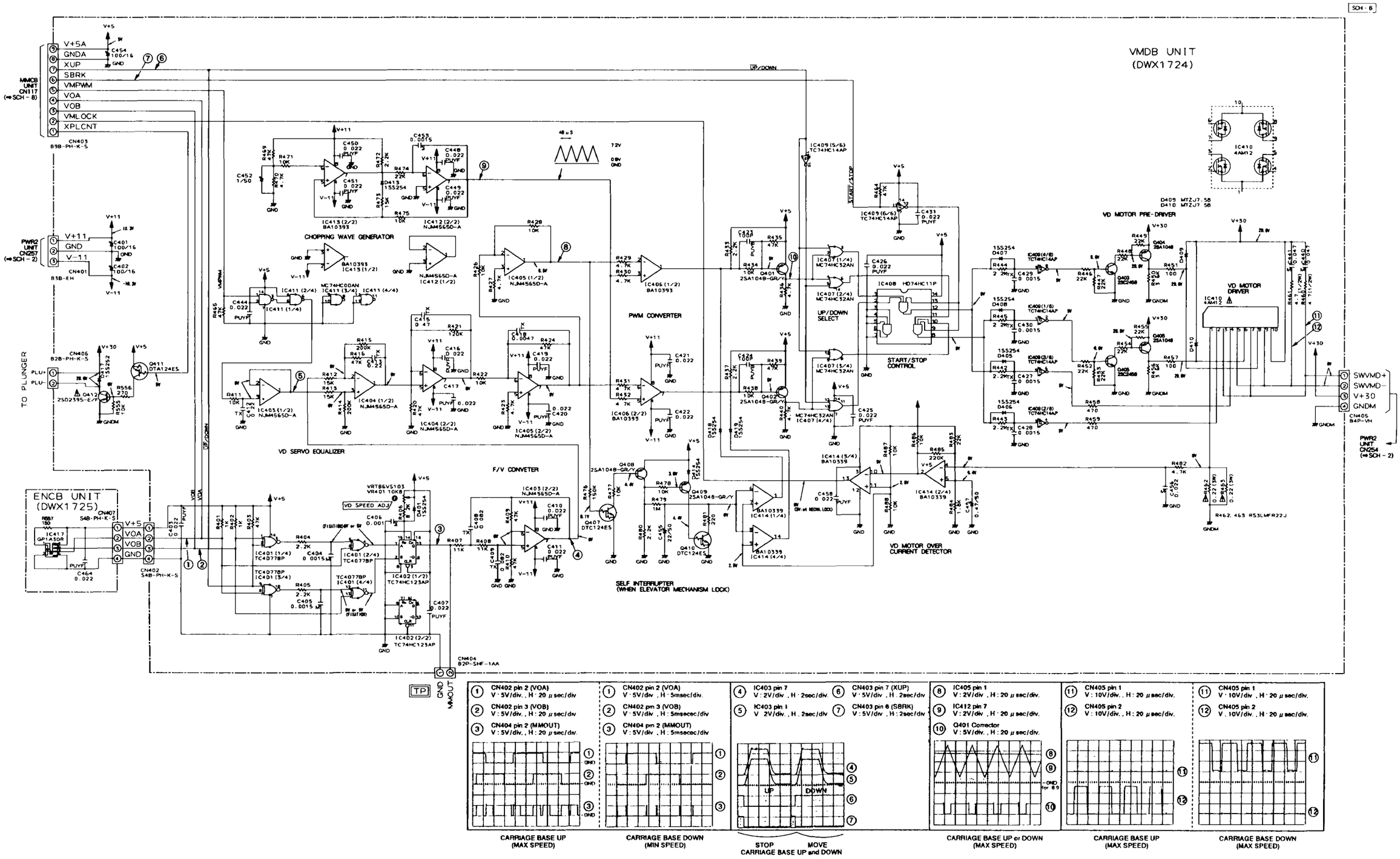
PCB – 4



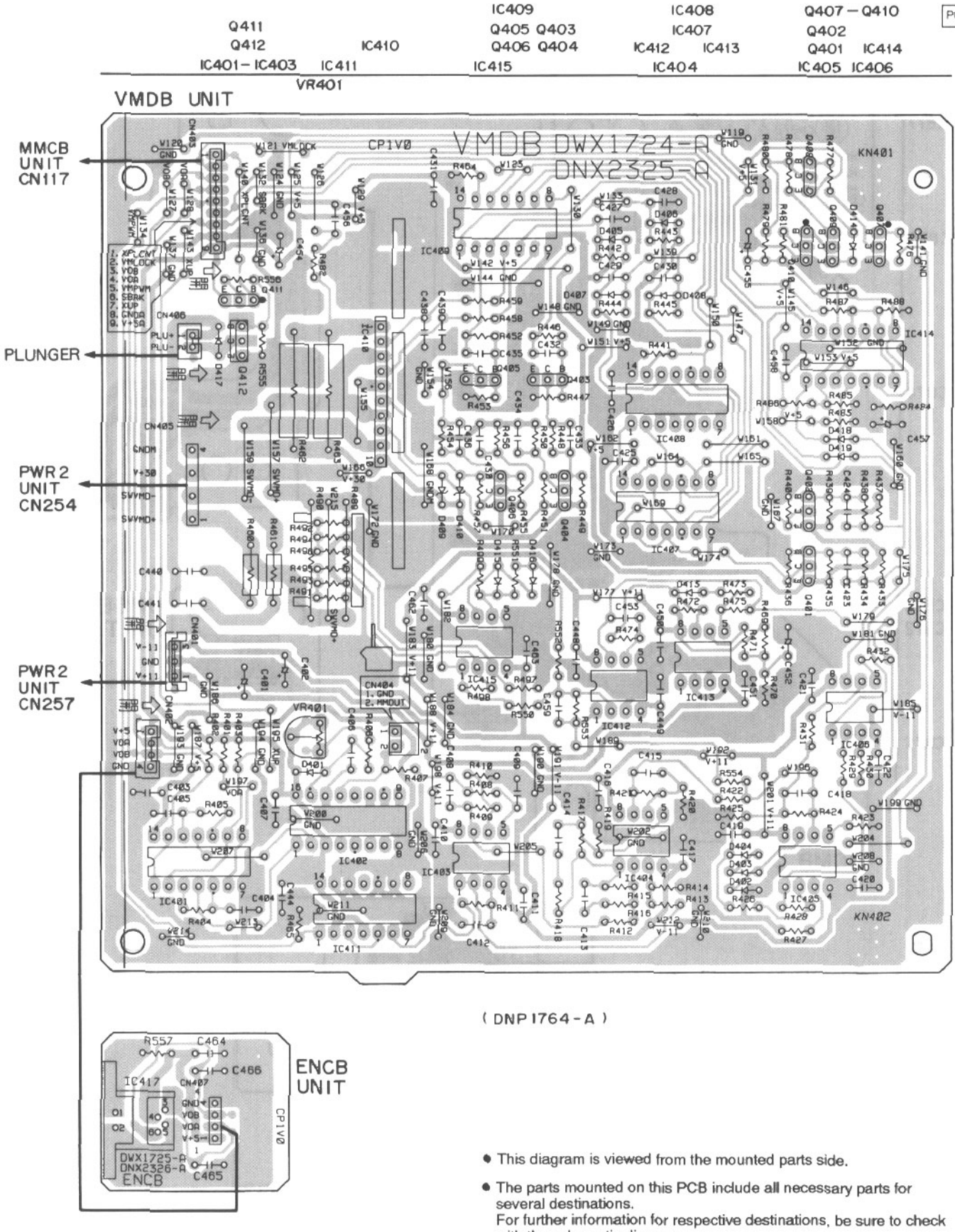
(DNP1763-A)

- This diagram is viewed from the mounted parts side.
- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.

5.6 VMDB AND ENCB UNITS

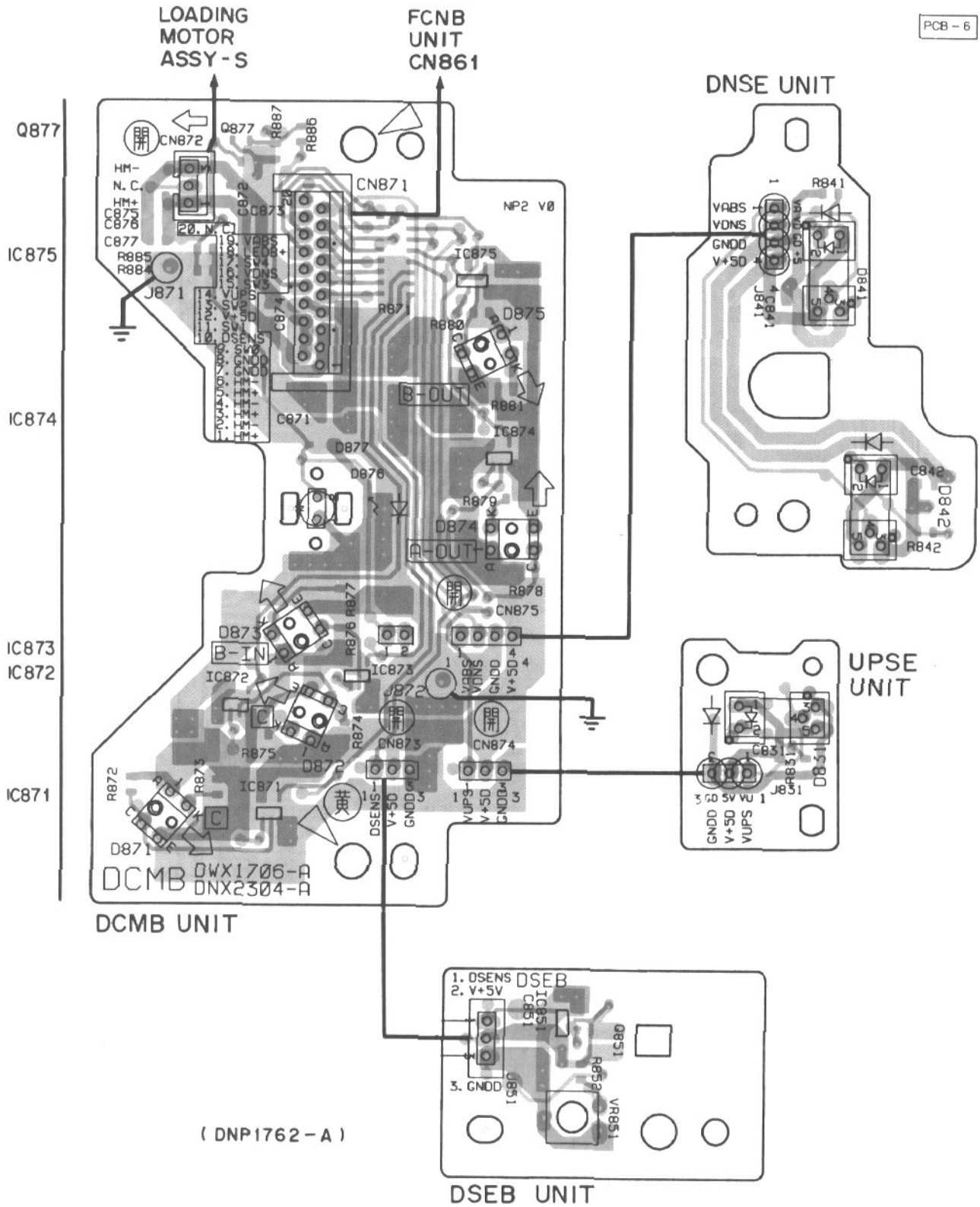

VMDB UNIT
(DWX1724)
ENCB UNIT
(DWX1725)
SCH-6
V+5A
GNDA
XUP
SBRK
VMPWM
VOA
VOB
VMLOCK
XPLCNT
MMCB UNIT CN117 (⇒SCH-8)
PWR2 UNIT CN257 (⇒SCH-2)
TO PLUNGER
CHOPPING WAVE GENERATOR
VD SERVO EQUALIZER
F/V CONVETER
PWM CONVERTER
VD SPEED ADJ
UP/DOWN SELECT
START/STOP CONTROL
VD MOTOR PRE-DRIVER
VD MOTOR DRIVER
VD MOTOR OVER CURRENT DETECTOR
SELF INTERRUPTER (WHEN ELEVATOR MECHANISM LOCK)
SWVMD+
SWVMD-
V+30
GNDM
PWR2 UNIT CN254 (⇒SCH-2)
CN402 pin 2 (VOA) V : 5V/div. , H : 20 μsec/div
CN402 pin 3 (VOB) V : 5V/div. , H : 20 μsec/div
CN404 pin 2 (MMOUT) V : 5V/div. , H : 20 μsec/div.
CARRIAGE BASE UP (MAX SPEED)
CN402 pin 2 (VOA) V : 5V/div , H : 5msec/div.
CN402 pin 3 (VOB) V : 5V/div , H : 5msec/div
CN404 pin 2 (MMOUT) V : 5V/div , H : 5msec/div
CARRIAGE BASE DOWN (MIN SPEED)
IC403 pin 7 V : 2V/div , H : 2sec/div
IC403 pin 1 V 2V/div , H . 2sec/div
CN403 pin 7 (XUP) V : 5V/div , H . 2sec/div
CN403 pin 6 (SBRK) V : 5V/div , H : 2sec/div
UP
DOWN
STOP
MOVE
CARRIAGE BASE UP and DOWN
IC405 pin 1 V : 2V/div , H : 20 μsec/div.
IC412 pin 7 V : 2V/div , H : 20 μsec/div.
Q401 Corrector V : 5V/div. , H : 20 μsec/div.
CARRIAGE BASE UP or DOWN (MAX SPEED)
CN405 pin 1 V : 10V/div. , H : 20 μsec/div.
CN405 pin 2 V : 10V/div. , H : 20 μsec/div.
CARRIAGE BASE UP (MAX SPEED)
CN405 pin 1 V : 10V/div , H : 20 μsec/div.
CN405 pin 2 V . 10V/div. , H . 20 μsec/div.
CARRIAGE BASE DOWN (MAX SPEED)

PCB ~ 5



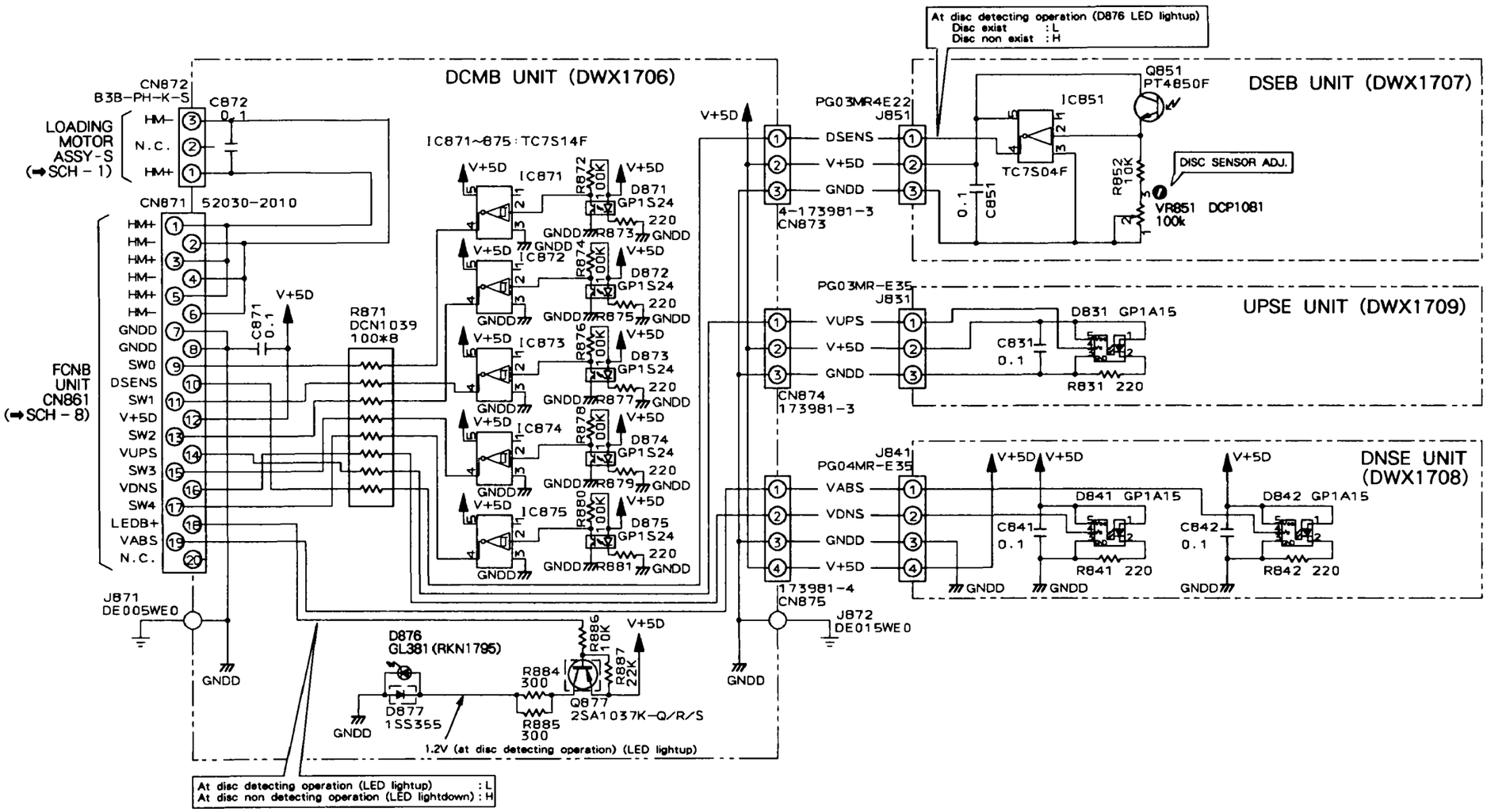
- This diagram is viewed from the mounted parts side.
- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.

5.7 DCMB, DSEB, DNSE AND UPSE UNITS

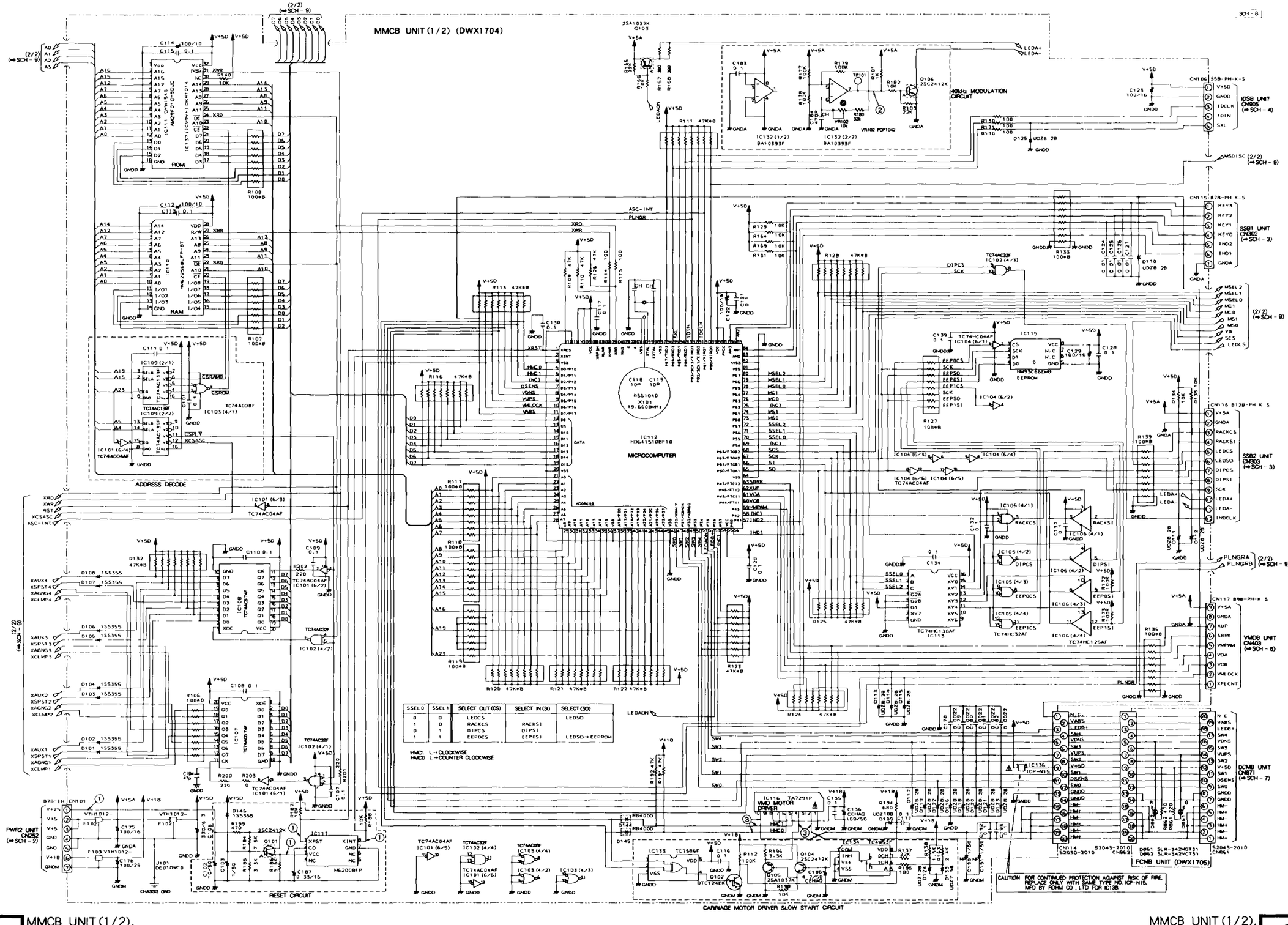


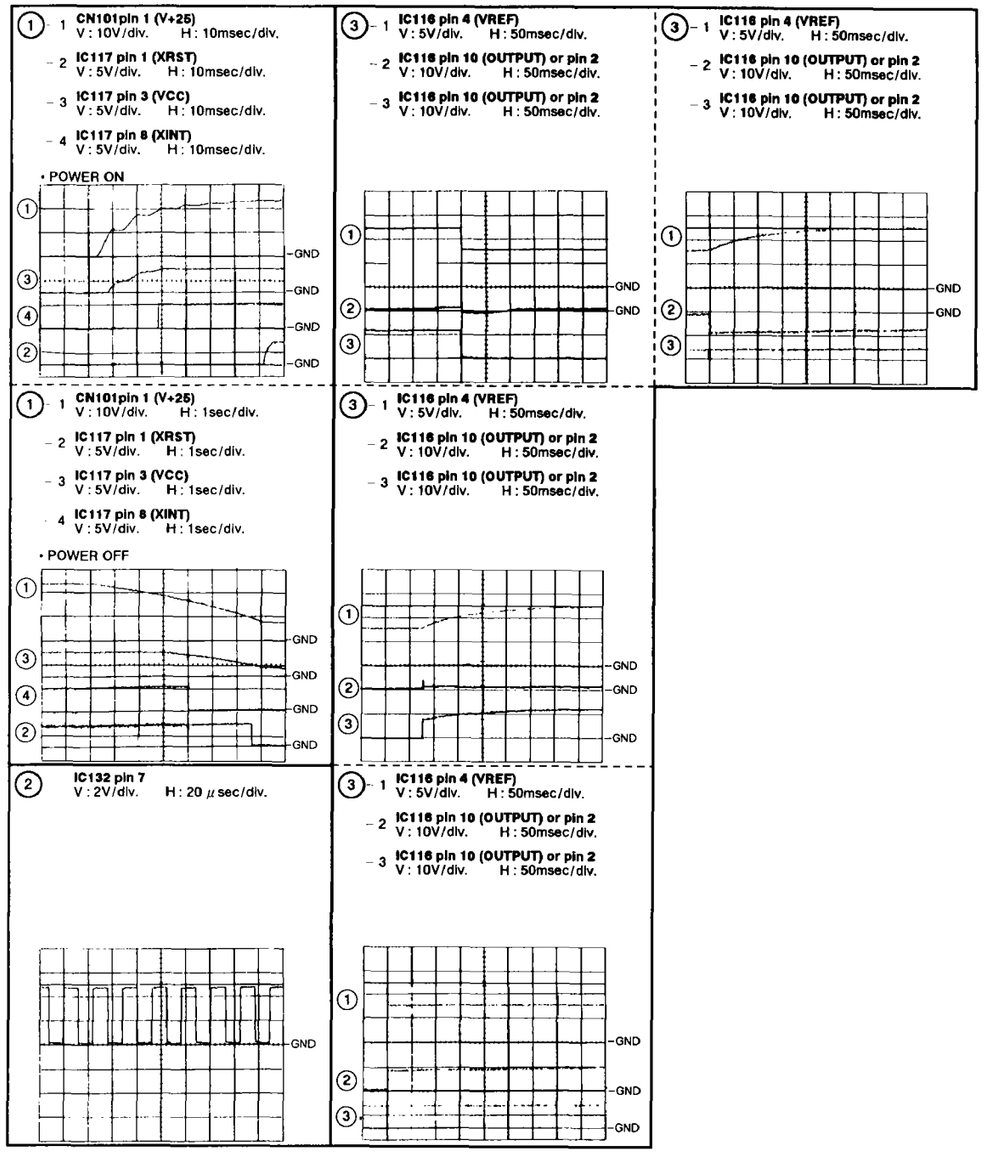
- This diagram is viewed from the pink colored foil side.
- This PCB is double sided.
- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.

SCH - 7

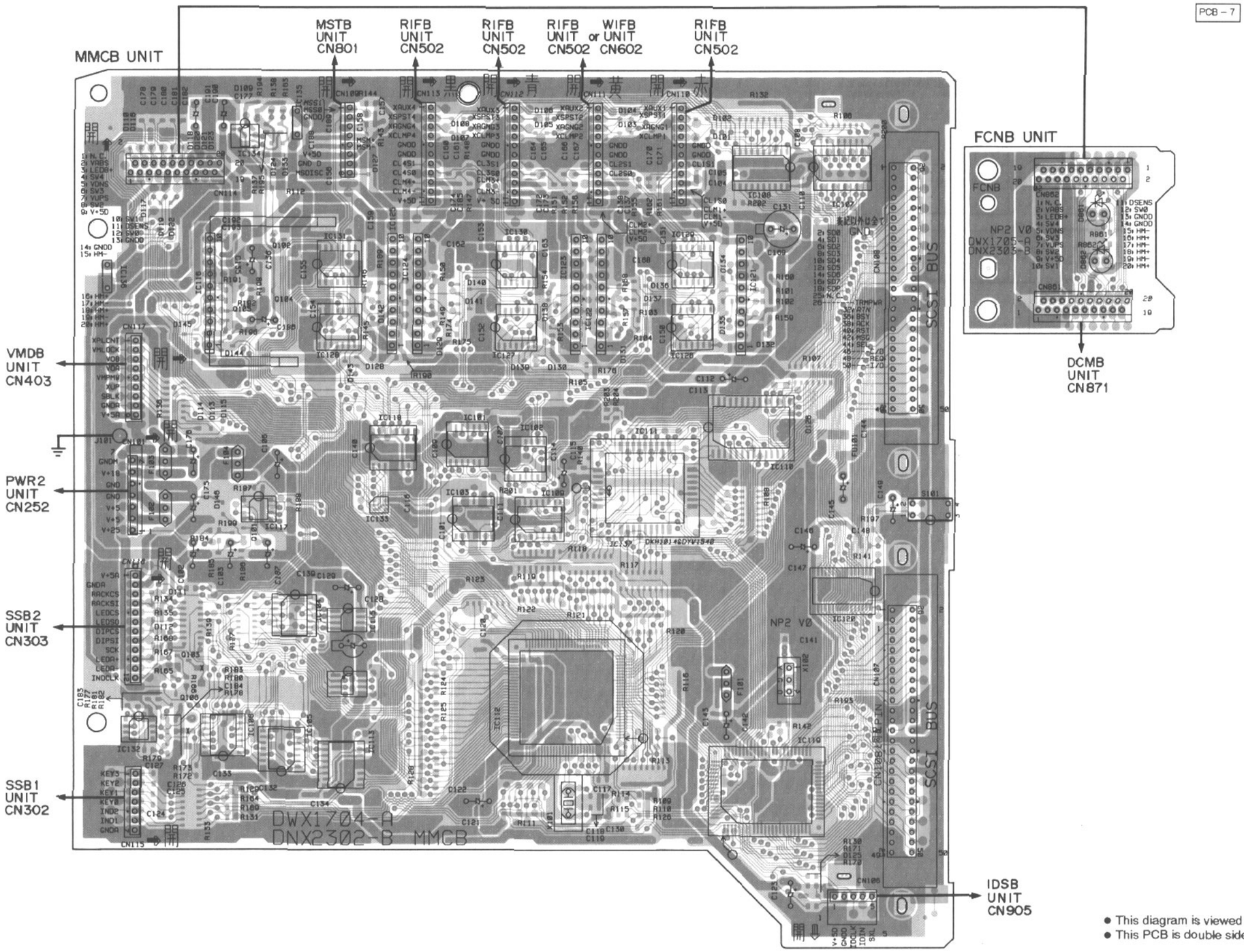

DCMB UNIT (DWX1706)
DSEB UNIT (DWX1707)
UPSE UNIT (DWX1709)
DNSE UNIT (DWX1708)
CN872
B3B-PH-K-S
C872
0.1
LOADING MOTOR ASSY-S (➡SCH - 1)
HM-
N.C.
HM+
CN871 52030-2010
FCNB UNIT CN861 (➡SCH - 8)
C871 0.1
V+5D
R871 DCN1039 100*8
IC871~875 : TC7S14F
IC871
IC872
IC873
IC874
IC875
R872 100K
R873
R874 100K
R875
R876 100K
R877
R878 100K
R879
R880 100K
R881
D871 GP1S24
D872 GP1S24
D873 GP1S24
D874 GP1S24
D875 GP1S24
220
GNDD
J871 DE005WE0
J872 DE015WE0
CN873 4-173981-3
CN874 173981-3
CN875 173981-4
PG03MR4E22 J851
DSENS
V+5D
GNDD
PG03MR-E35 J831
VUPS
PG04MR-E35 J841
VABS
VDNS
At disc detecting operation (D876 LED lightup)
Disc exist : L
Disc non exist : H
Q851 PT4850F
IC851 TC7S04F
C851 0.1
R852 10K
DISC SENSOR ADJ.
VR851 DCP1081 100k
D831 GP1A15
C831 0.1
R831 220
D841 GP1A15
C841 0.1
R841 220
D842 GP1A15
C842 0.1
R842 220
D876 GL381 (RKN1795)
R884 300
R885 300
R886 10K
R887 22K
Q877 2SA1037K-Q/R/S
D877 1SS355
1.2V (at disc detecting operation) (LED lightup)
At disc detecting operation (LED lightup) : L
At disc non detecting operation (LED lightdown) : H

5.8 MMCB (1/2) AND FCNB UNITS


MMCB UNIT (1/2) (DWX1704)
SCH-8
MICROCOMPUTER
IC112
HD641510BF10
ADDRESS DECODE
RESET CIRCUIT
CARRIAGE MOTOR DRIVER SLOW START CIRCUIT
40kHz MODULATION CIRCUIT
VMD MOTOR DRIVER
EEPROM
FCNB UNIT (DWX1705)
CAUTION FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE IND. ICP-N15. MFD BY ROHM CO., LTD FOR IC136.
SSEL0 SSEL1 SELECT OUT (CS) SELECT IN (SI) SELECT (SO)
0 0 LEDCS LEDSO
1 0 RACKCS RACKSI
0 1 DIPCS DIPSI
1 1 EEPOCS EEPOSI LEDSO→EEPROM
HMC1 L→CLOCKWISE
HMC0 L→COUNTER CLOCKWISE


① 1 CN101pin 1 (V+25)
V : 10V/div. H : 10msec/div.
2 IC117 pin 1 (XRST)
V : 5V/div. H : 10msec/div.
3 IC117 pin 3 (VCC)
V : 5V/div. H : 10msec/div.
4 IC117 pin 8 (XINT)
V : 5V/div. H : 10msec/div.
• POWER ON
GND
GND
GND
GND
③ 1 IC116 pin 4 (VREF)
V : 5V/div. H : 50msec/div.
2 IC116 pin 10 (OUTPUT) or pin 2
V : 10V/div. H : 50msec/div.
3 IC116 pin 10 (OUTPUT) or pin 2
V : 10V/div. H : 50msec/div.
GND
GND
③ 1 IC116 pin 4 (VREF)
V : 5V/div. H : 50msec/div.
2 IC116 pin 10 (OUTPUT) or pin 2
V : 10V/div. H : 50msec/div.
3 IC116 pin 10 (OUTPUT) or pin 2
V : 10V/div. H : 50msec/div.
GND
GND
① 1 CN101pin 1 (V+25)
V : 10V/div. H : 1sec/div.
2 IC117 pin 1 (XRST)
V : 5V/div. H : 1sec/div.
3 IC117 pin 3 (VCC)
V : 5V/div. H : 1sec/div.
4 IC117 pin 8 (XINT)
V : 5V/div. H : 1sec/div.
• POWER OFF
GND
GND
GND
GND
③ 1 IC116 pin 4 (VREF)
V : 5V/div. H : 50msec/div.
2 IC116 pin 10 (OUTPUT) or pin 2
V : 10V/div. H : 50msec/div.
3 IC116 pin 10 (OUTPUT) or pin 2
V : 10V/div. H : 50msec/div.
GND
GND
GND
② IC132 pin 7
V : 2V/div. H : 20 μsec/div.
GND
③ 1 IC116 pin 4 (VREF)
V : 5V/div. H : 50msec/div.
2 IC116 pin 10 (OUTPUT) or pin 2
V : 10V/div. H : 50msec/div.
3 IC116 pin 10 (OUTPUT) or pin 2
V : 10V/div. H : 50msec/div.
GND
GND
GND

PCB – 7



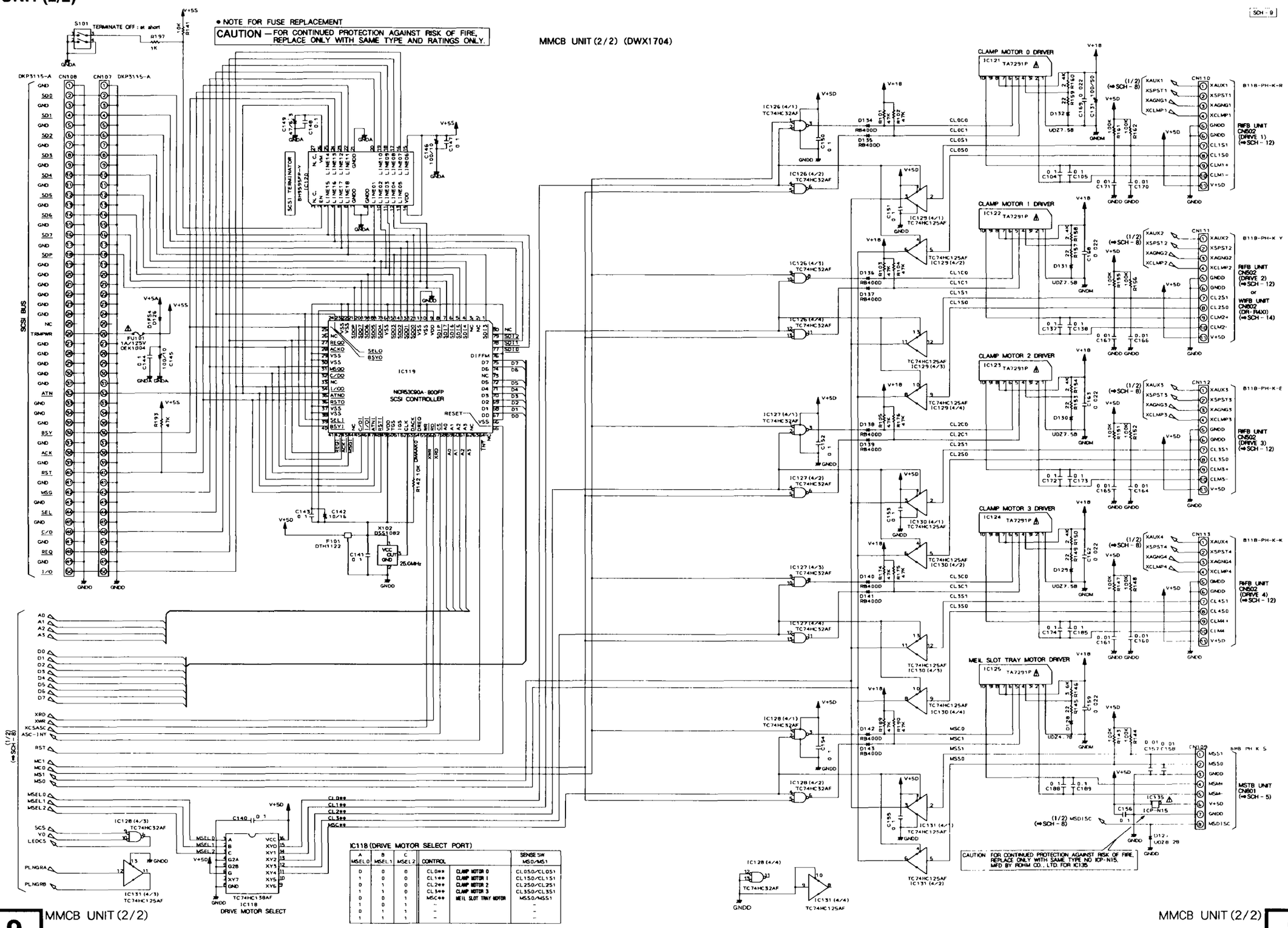
(DNP1761-B)

IC136 IC134 IC135 IC125 IC124 IC130 IC123 IC122 IC129 IC108 IC107
IC116 Q102 Q104 Q105 IC131 IC118 IC127 IC126 IC121
Q101 IC117 IC128 IC133 IC101 – IC103 IC109 IC137 IC110
Q103 IC104 IC115 IC112 IC119 IC120
IC132 Q106 IC106 IC105 IC113

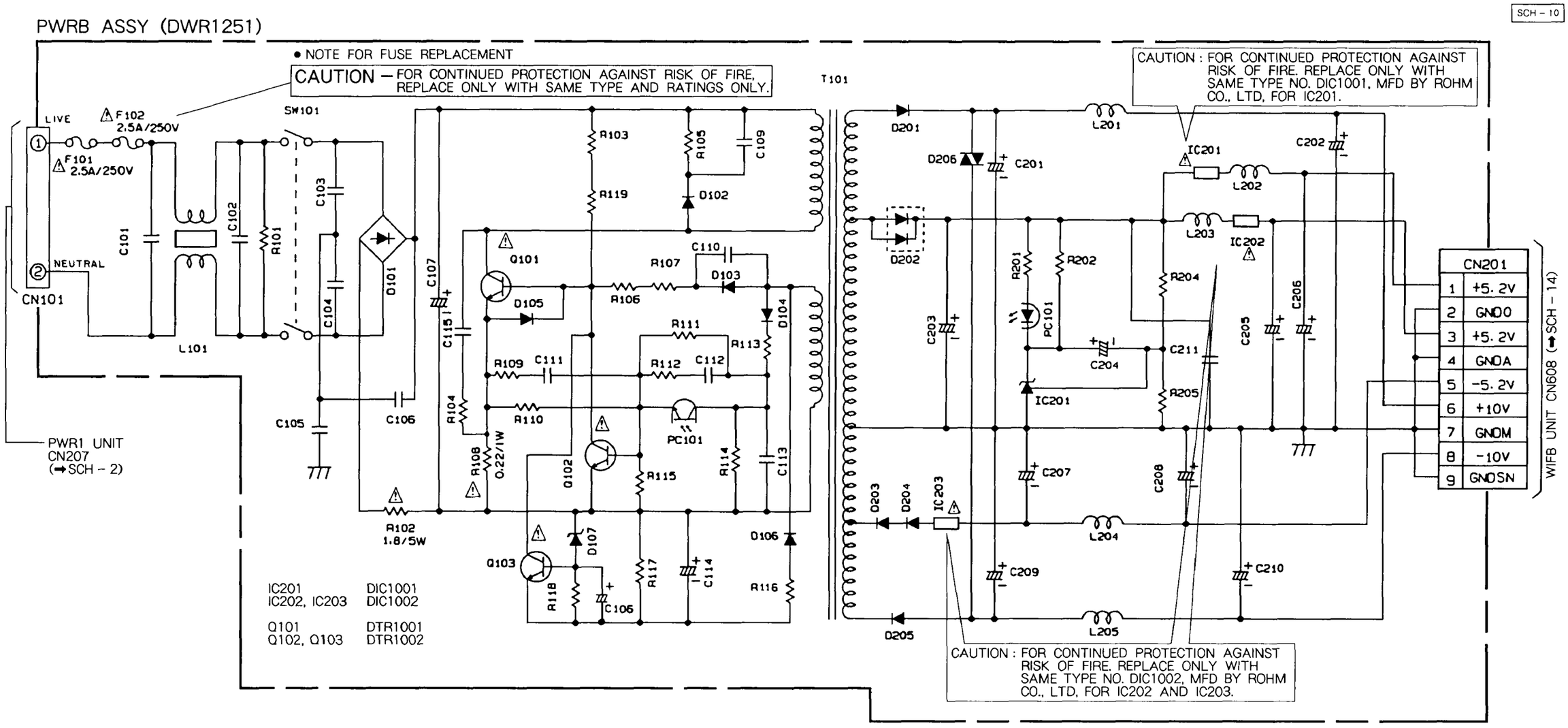
- This diagram is viewed from the pink colored foil side.
- This PCB is double sided.

- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.

5.9 MMCB UNIT (2/2)


MMCB UNIT (2/2) (DWX1704)
SCH - 9
• NOTE FOR FUSE REPLACEMENT
CAUTION — FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE AND RATINGS ONLY.
SCSI BUS
DKP5115-A
CN108
CN107
S101 TERMINATE OFF : at short
IC119 NCR53C90A-80DFP SCSI CONTROLLER
SCSI TERMINATOR IC120 BH1555FP-Y
FU101 1A/125V 0EK1004
IC118 TC74HC138AF DRIVE MOTOR SELECT
IC131 (4/3) TC74HC125AF
IC128 (4/3) TC74HC32AF
X102 DSS1082 25.0MHz
F101 DTH1122
CLAMP MOTOR 0 DRIVER
CLAMP MOTOR 1 DRIVER
CLAMP MOTOR 2 DRIVER
CLAMP MOTOR 3 DRIVER
MEIL SLOT TRAY MOTOR DRIVER
IC121 TA7291P
IC122 TA7291P
IC123 TA7291P
IC124 TA7291P
IC125 TA7291P
IC126 (4/1) TC74HC32AF
IC126 (4/2) TC74HC32AF
IC126 (4/3) TC74HC32AF
IC126 (4/4) TC74HC32AF
IC127 (4/1) TC74HC32AF
IC127 (4/2) TC74HC32AF
IC127 (4/3) TC74HC32AF
IC127 (4/4) TC74HC32AF
IC128 (4/1) TC74HC32AF
IC128 (4/2) TC74HC32AF
IC128 (4/4) TC74HC32AF
IC129 (4/1) TC74HC125AF
IC129 (4/2) TC74HC125AF
IC129 (4/3) TC74HC125AF
IC129 (4/4) TC74HC125AF
IC130 (4/1) TC74HC125AF
IC130 (4/2) TC74HC125AF
IC130 (4/3) TC74HC125AF
IC130 (4/4) TC74HC125AF
IC131 (4/1) TC74HC125AF
IC131 (4/2) TC74HC125AF
IC131 (4/4) TC74HC125AF
IC135 ICP-N15
RIFB UNIT CN502 (DRIVE 1) (⇒SCH-12)
RIFB UNIT CN502 (DRIVE 2) (⇒SCH-12)
RIFB UNIT CN502 (DRIVE 3) (⇒SCH-12)
RIFB UNIT CN502 (DRIVE 4) (⇒SCH-12)
or
WIFB UNIT CN502 (DR-R4XI) (⇒SCH-14)
MSTB UNIT CN901 (⇒SCH-5)
B11B-PH-K-R
B11B-PH-K-Y
B11B-PH-K-E
B11B-PH-K-K
BMB PH K S
IC118 (DRIVE MOTOR SELECT PORT)
A MSEL0 | B MSEL1 | C MSEL2 | CONTROL | | SENSE SW MS0/MS1
0 0 0 CL0** CLAMP MOTOR 0 CL0S0/CL0S1
1 0 0 CL1** CLAMP MOTOR 1 CL1S0/CL1S1
0 1 0 CL2** CLAMP MOTOR 2 CL2S0/CL2S1
1 1 0 CL3** CLAMP MOTOR 3 CL3S0/CL3S1
0 0 1 MSC** MEIL SLOT TRAY MOTOR MSS0/MSS1
1 0 1 – – –
0 1 1 – – –
1 1 1 – – –
CAUTION FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE NO ICP-N15. MFD BY ROHM CO., LTD. FOR IC135

5.10 PWRB ASSY (DWR1251)

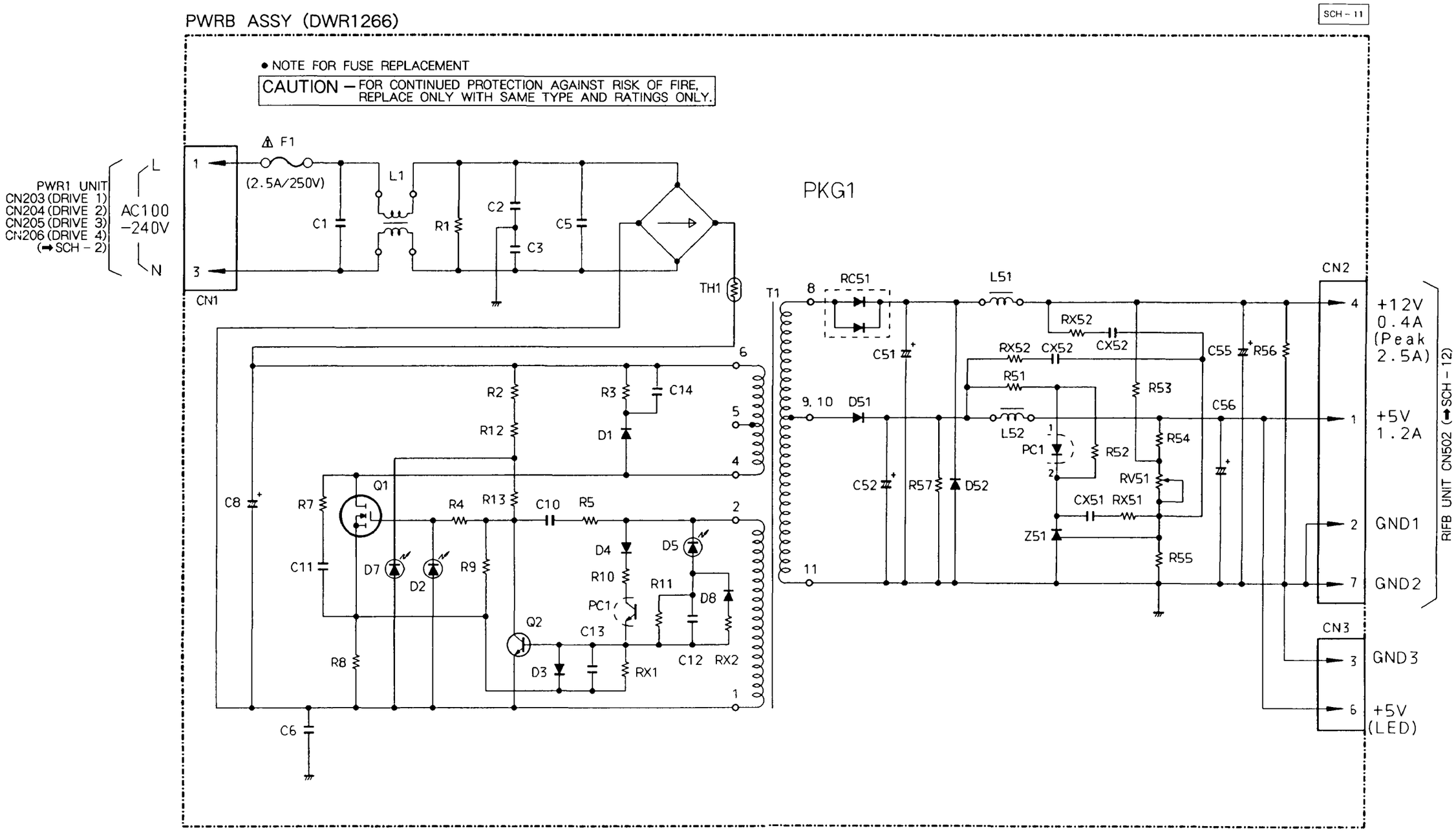

PWRB ASSY (DWR1251)
SCH - 10
• NOTE FOR FUSE REPLACEMENT
CAUTION — FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE AND RATINGS ONLY.
CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. DIC1001, MFD BY ROHM CO., LTD, FOR IC201.
LIVE
NEUTRAL
CN101
F102 2.5A/250V
F101 2.5A/250V
SW101
L101
T101
PWR1 UNIT CN207 (➡SCH - 2)
R102 1.8/5W
R108 0.22/1W
IC201 DIC1001
IC202, IC203 DIC1002
Q101 DTR1001
Q102, Q103 DTR1002
CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. DIC1002, MFD BY ROHM CO., LTD, FOR IC202 AND IC203.
CN201
1 +5.2V
2 GNDO
3 +5.2V
4 GNDA
5 -5.2V
6 +10V
7 GNDM
8 -10V
9 GNDSN
WIFB UNIT CN608 (➡SCH - 14)

RESISTORS: 1/6W UNLESS OTHERWISE NOTED

ELECT. CAPACITORS ⧧ : 50V UNLESS OTHERWISE NOTED

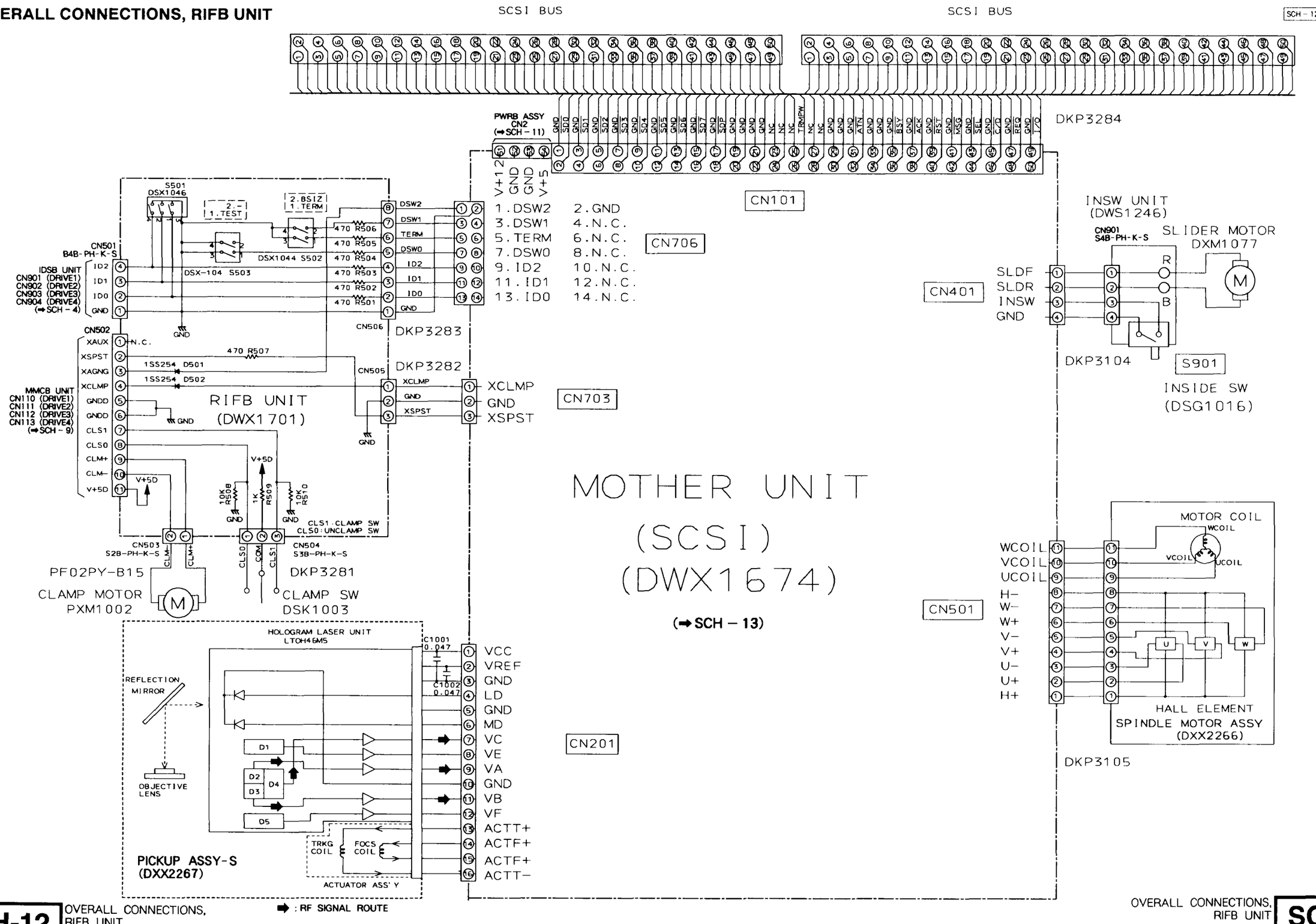
OTHER CAPACITORS ⫫ : 100V UNLESS OTHERWISE NOTED

5.11 PWRB ASSY (DWR1266)

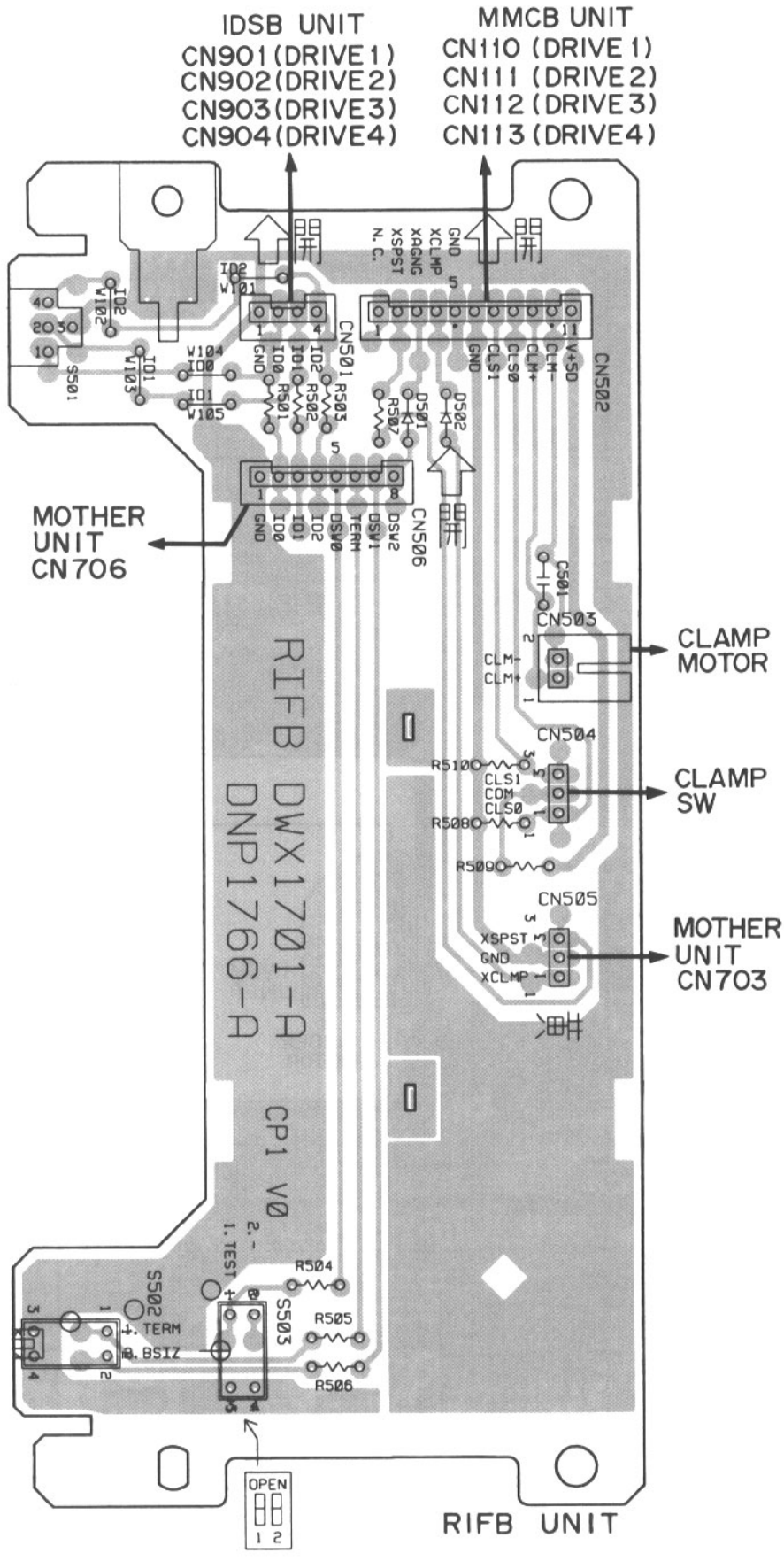


● DR-D4XI AND DR-D134X

5.12 OVERALL CONNECTIONS, RIFB UNIT

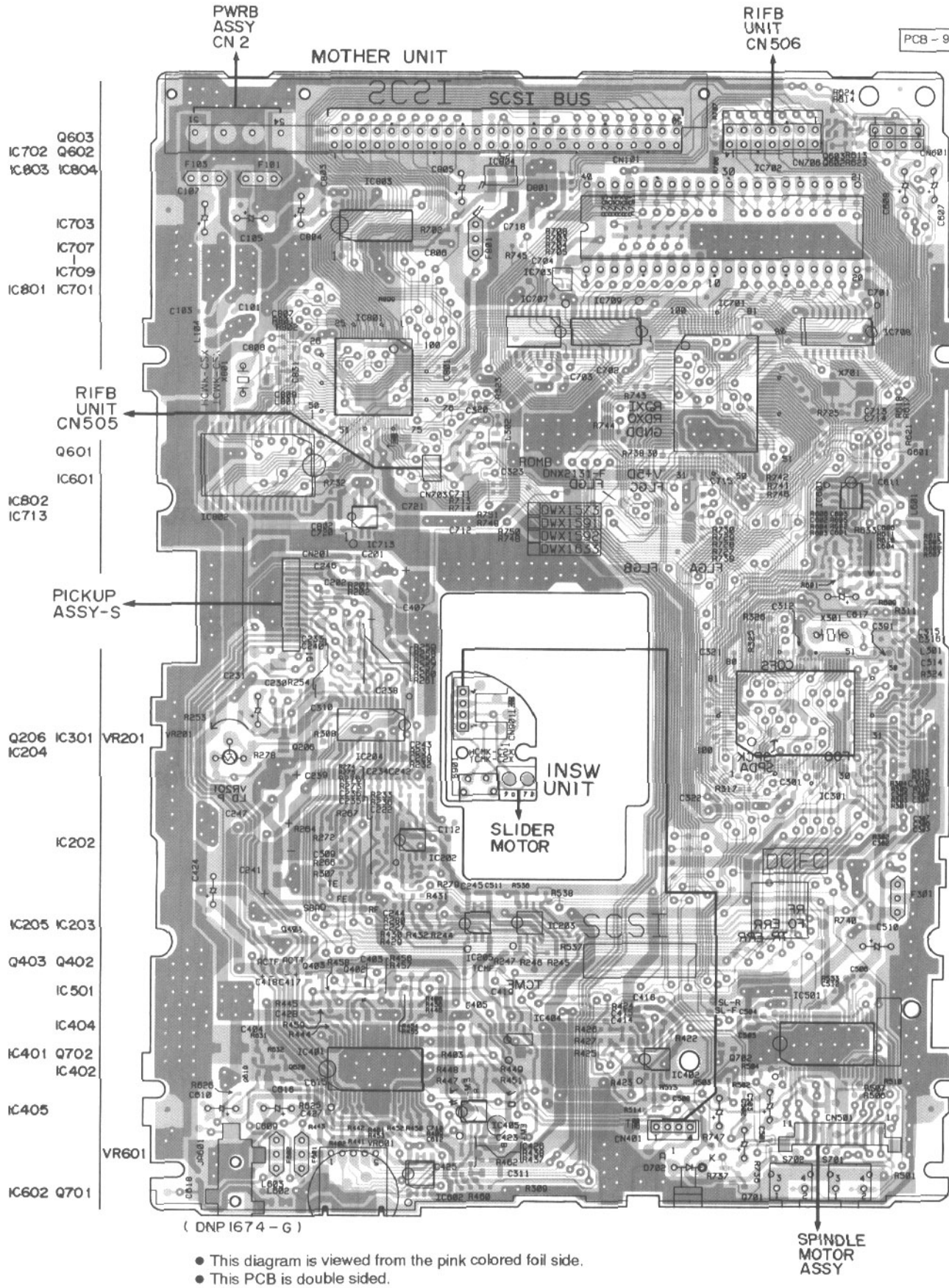


PCB – 8

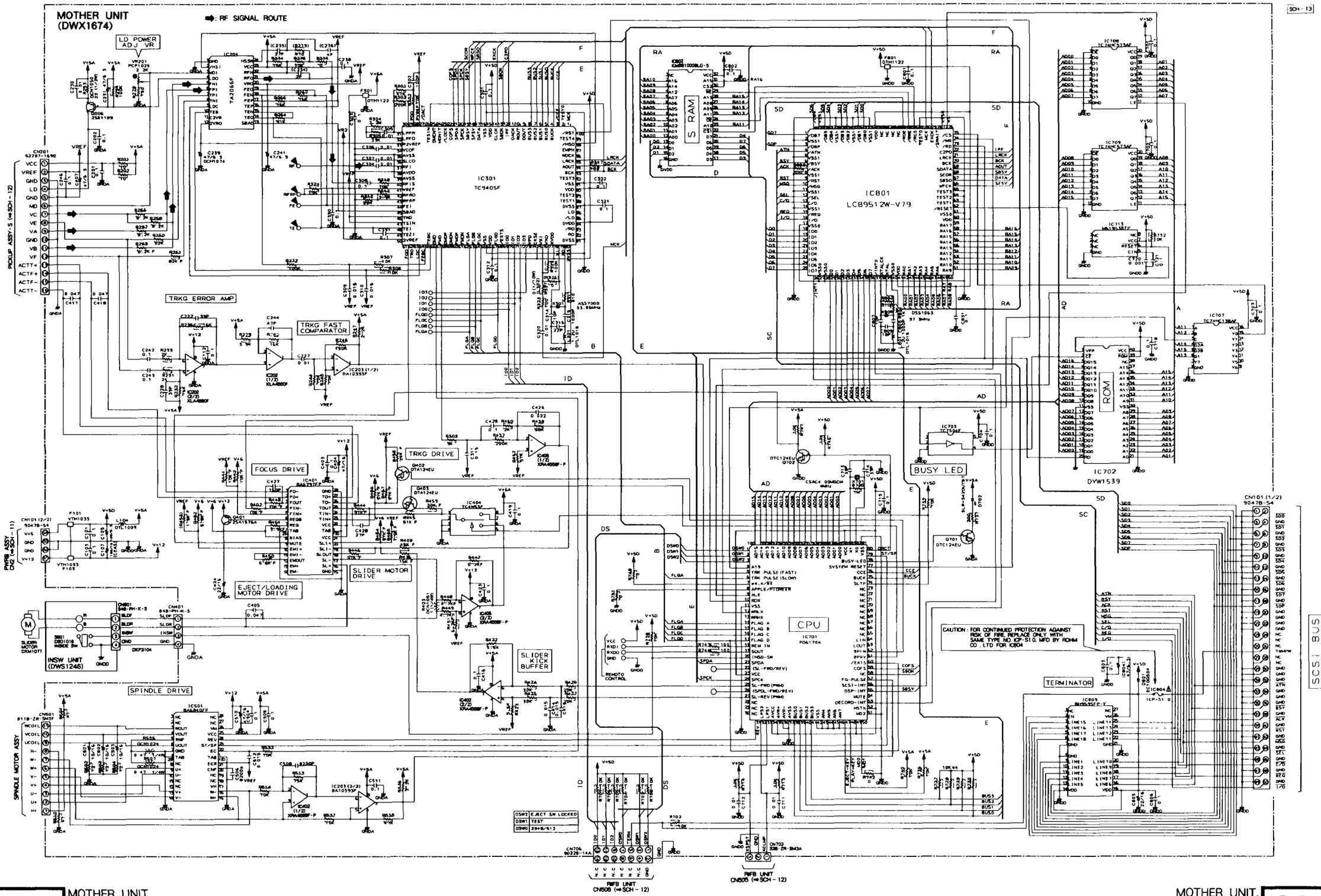


- This diagram is viewed from the mounted parts side.
- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.

5.13 MOTHER AND INSW UNITS

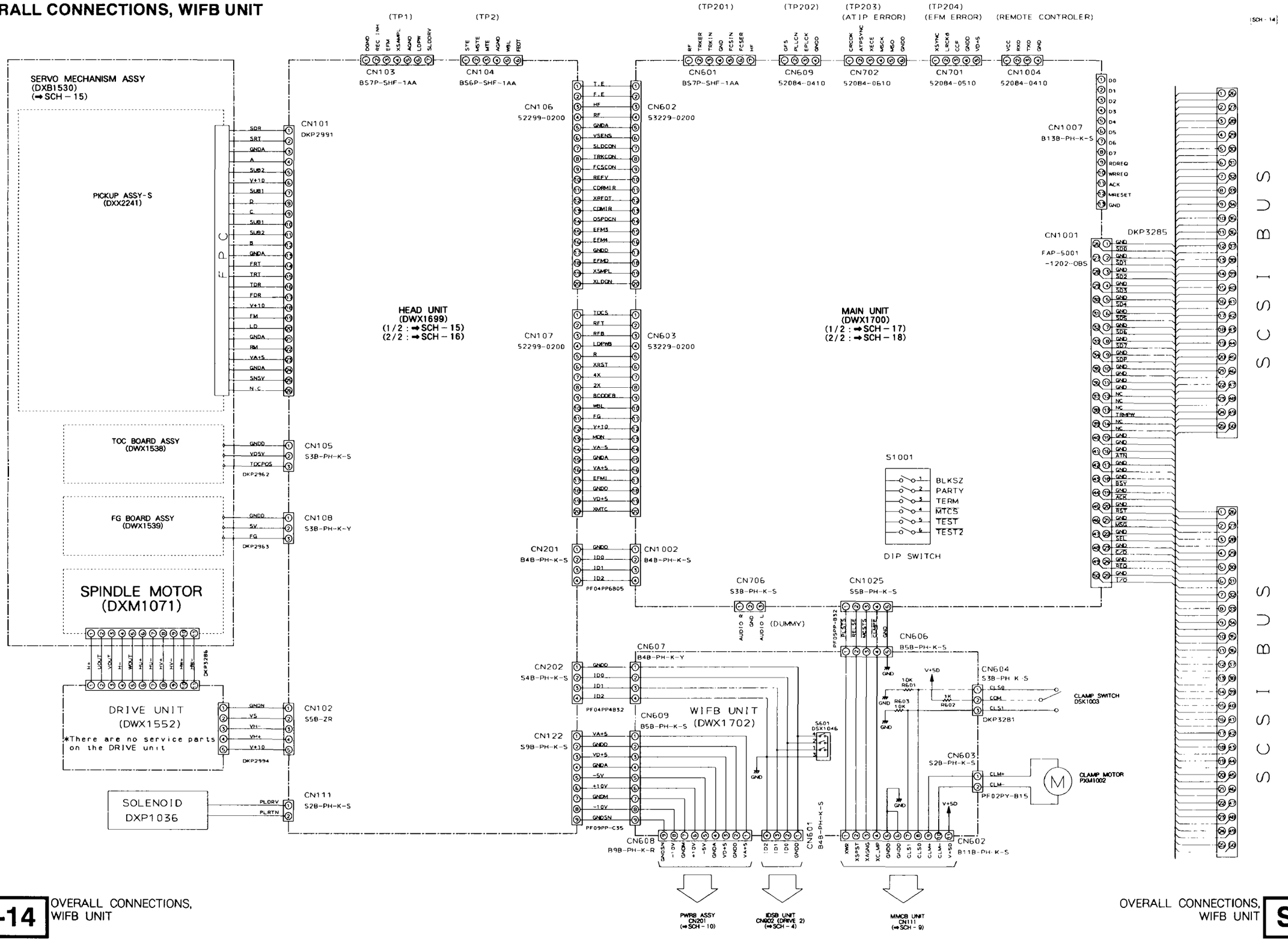


- This diagram is viewed from the pink colored foil side.
- This PCB is double sided.
- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.


MOTHER UNIT
(DWX1674)
: RF SIGNAL ROUTE
SCH-13
LD POWER ADJ VR
PICKUP ASSY-S (⇒SCH-12)
IC301
TC9405F
S RAM
IC801
LC89512W-V79
ROM
IC702
DYW1539
CPU
IC701
PD61-70A
TRKG ERROR AMP
TRKG FAST COMPARATOR
TRKG DRIVE
FOCUS DRIVE
SLIDER MOTOR DRIVE
EJECT/LOADING MOTOR DRIVE
SLIDER KICK BUFFER
SPINDLE DRIVE
BUSY LED
TERMINATOR
CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE NO. ICP-S10, MFD BY ROHM CO., LTD FOR IC804
SCSI BUS
INSW UNIT (DWS1246)
SLIDER MOTOR DRM107T
SPINDLE MOTOR ASSY
RWFB ASSY DXZ (⇒SCH-11)
RWFB UNIT CN508 (⇒SCH-12)
RWFB UNIT CN505 (⇒SCH-12)
OSW2 EJECT SW LOCKED
OSW1 TEST
OSW0 2845/512

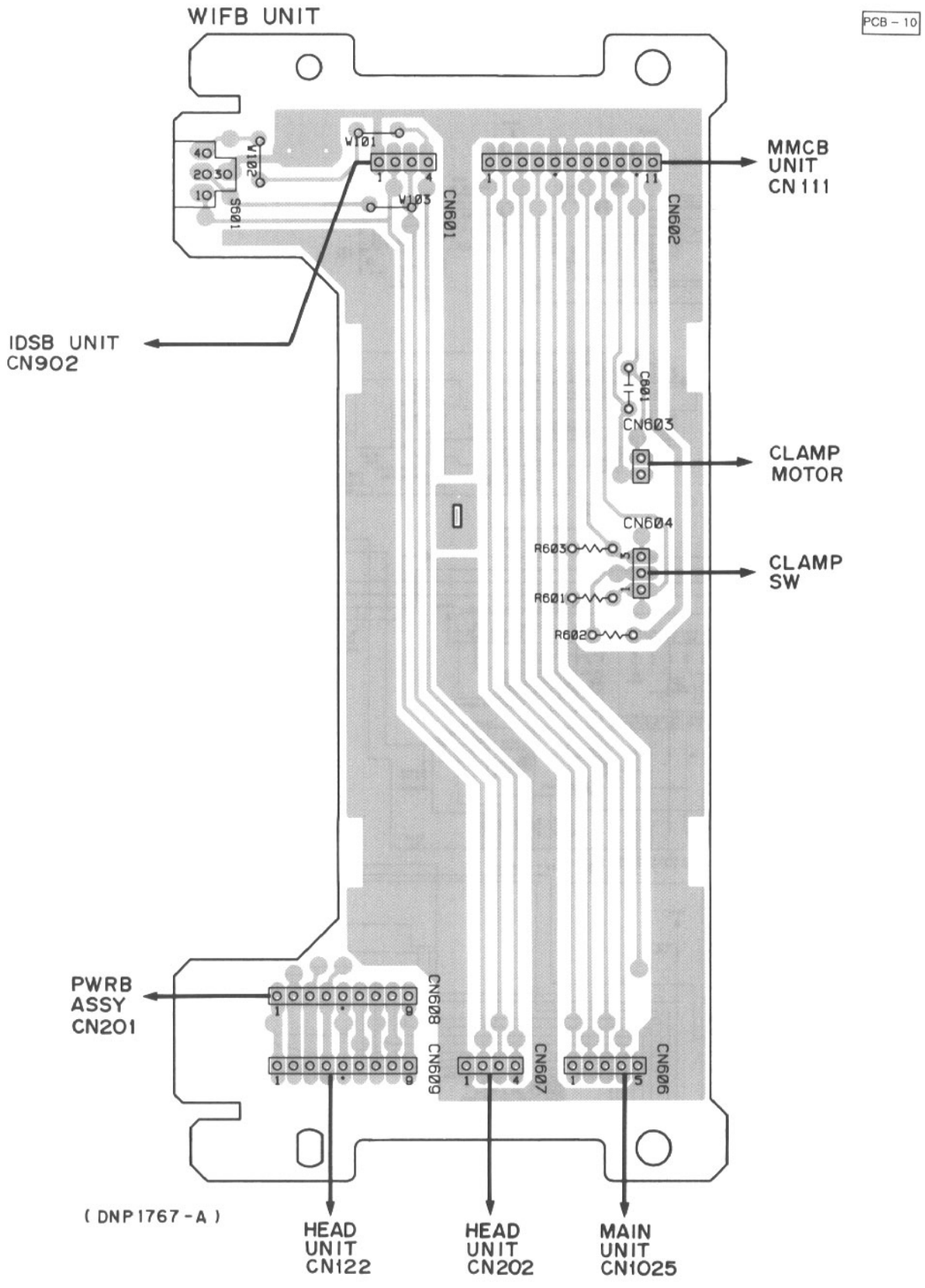
● DR – R4XI

5.14 OVERALL CONNECTIONS, WIFB UNIT



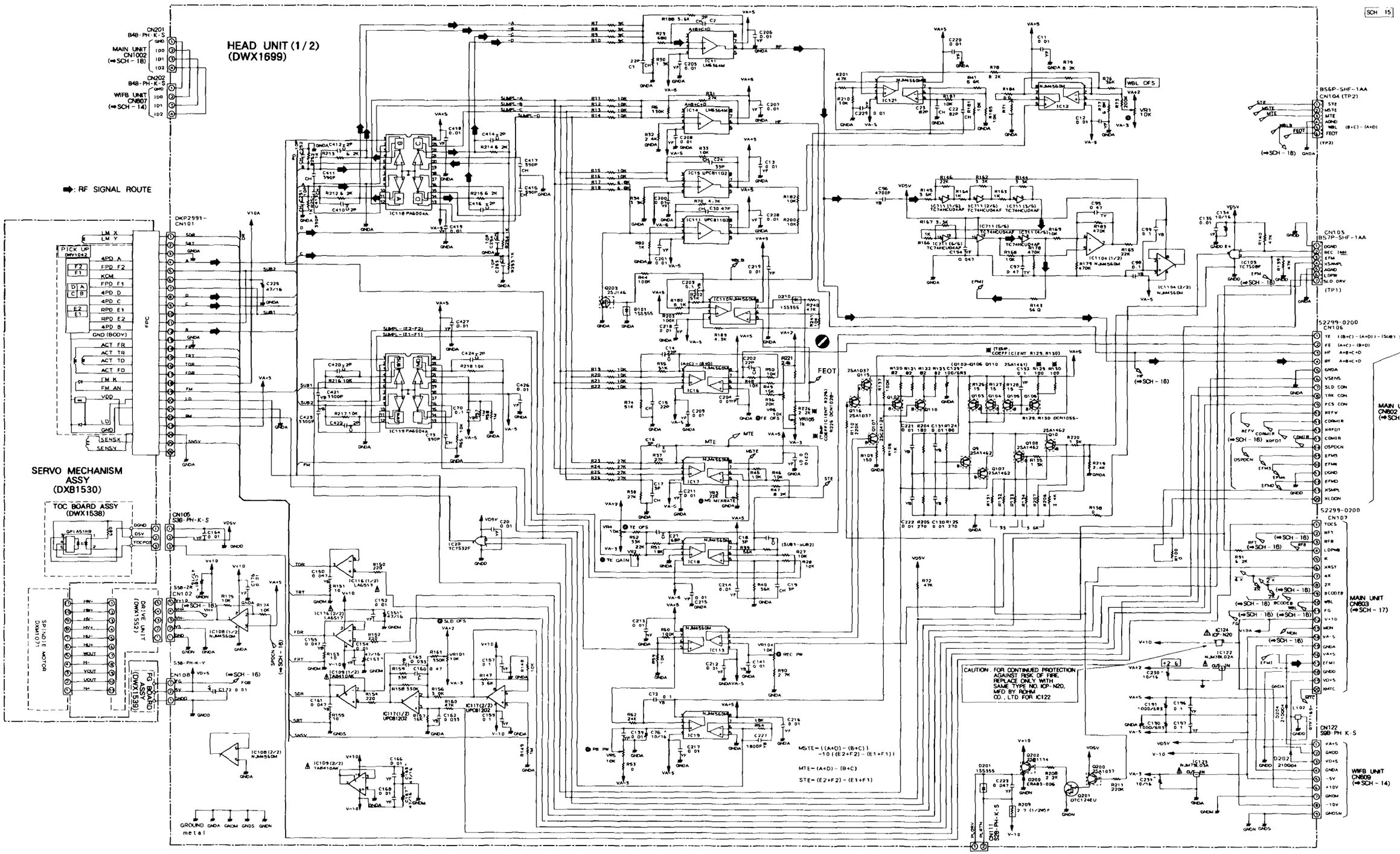
SCH-14 OVERALL CONNECTIONS, WIFB UNIT

OVERALL CONNECTIONS, WIFB UNIT **SCH-14**



- This diagram is viewed from the mounted parts side.
- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.

5.15 HEAD UNIT (1/2), TOC, FG BOARD ASSEMBLIES, DRIVE UNIT

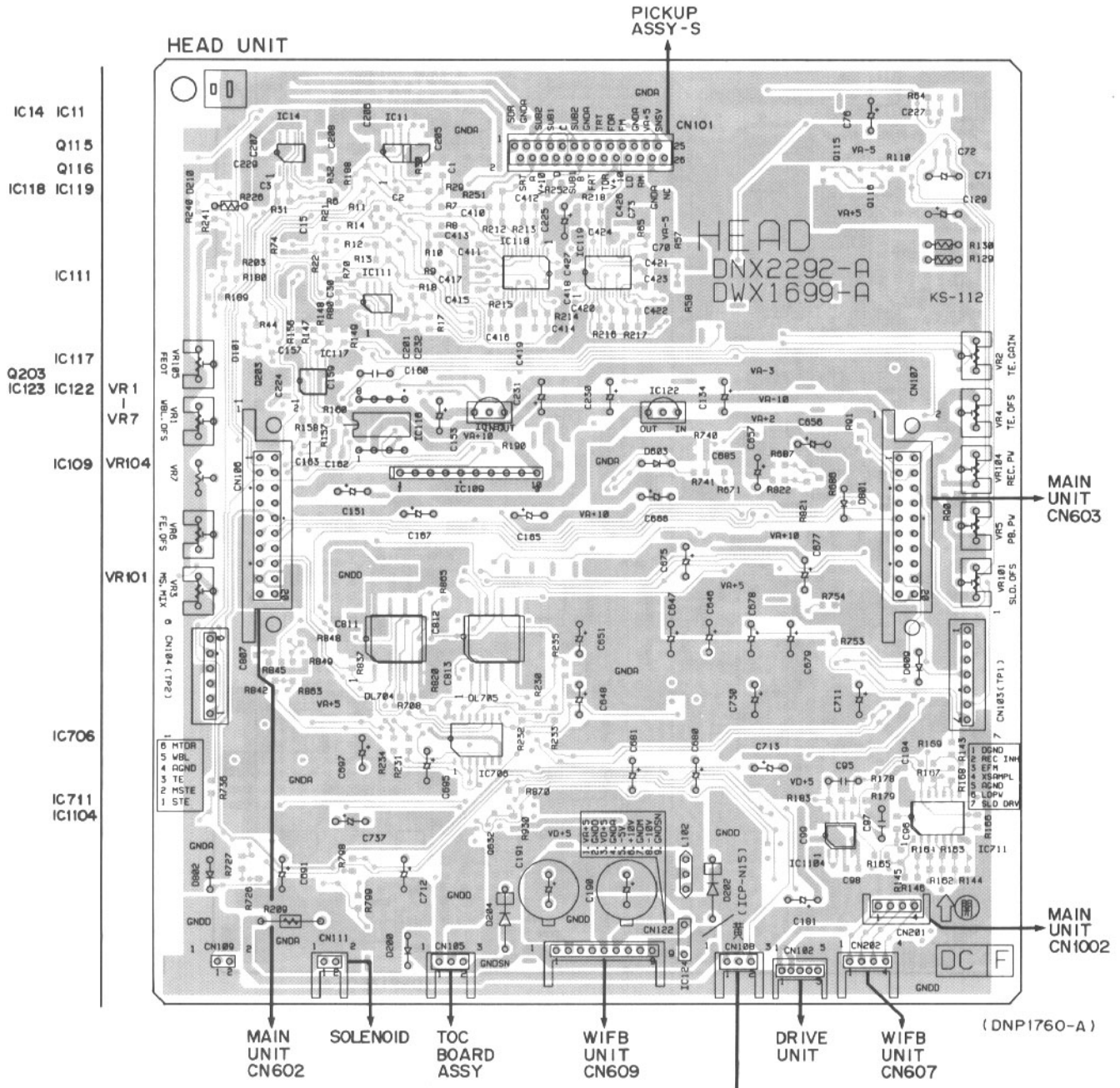


SCH-15 HEAD UNIT (1/2), TOC BOARD ASSY, FG BOARD ASSY, DRIVE UNIT

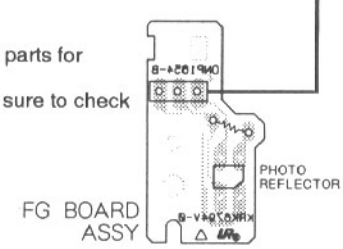
HEAD UNIT (1/2), TOC BOARD ASSY, FG BOARD ASSY, DRIVE UNIT **SCH-15**

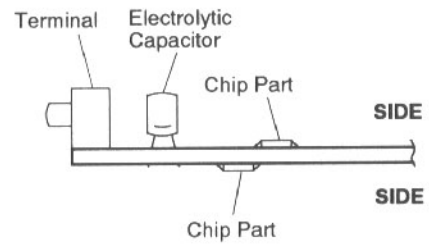
SIDE A

PCB – 11



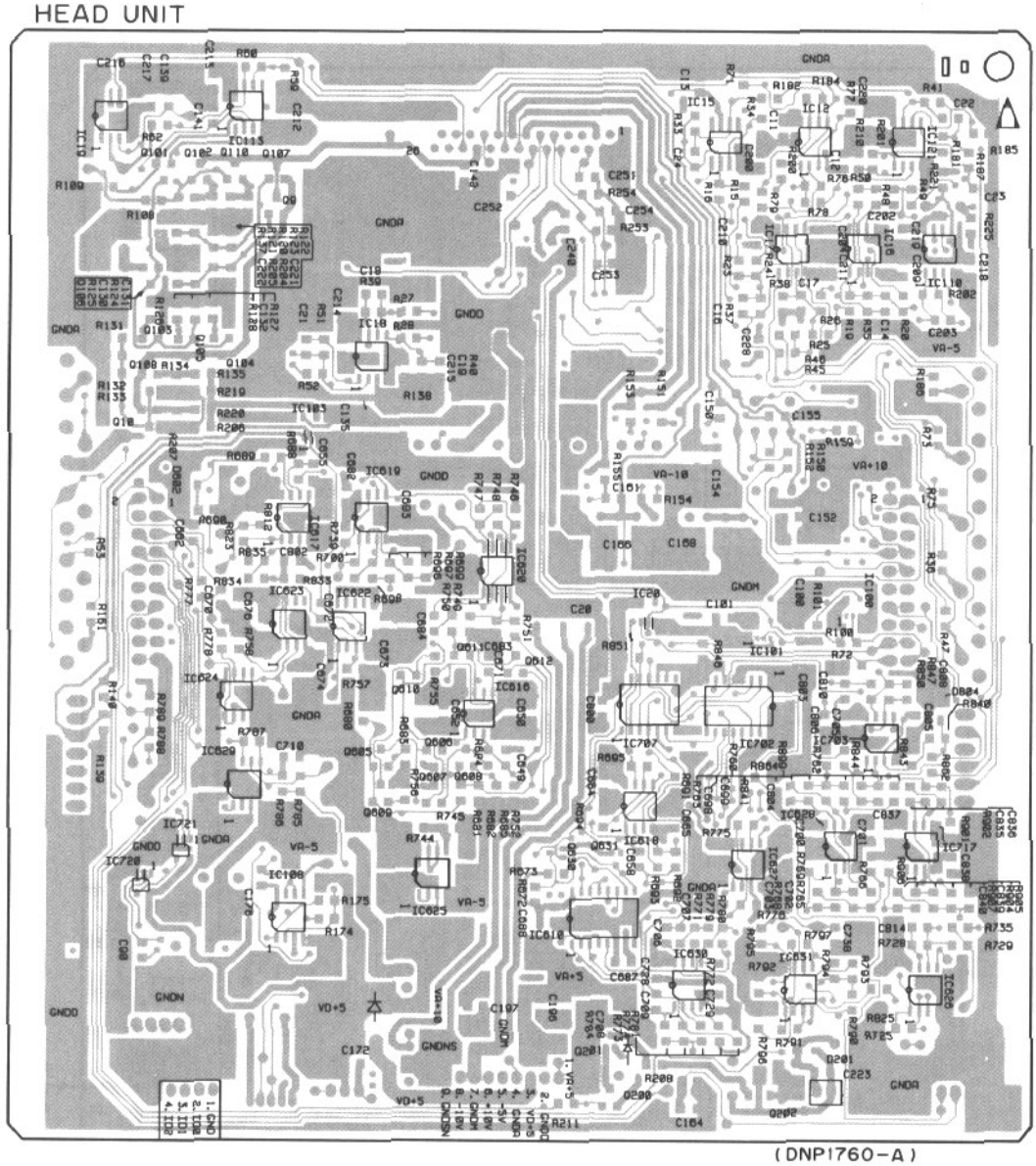
- This PCB is double sided.
- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.





SIDE B

HEAD UNIT



(DNP1760-A)

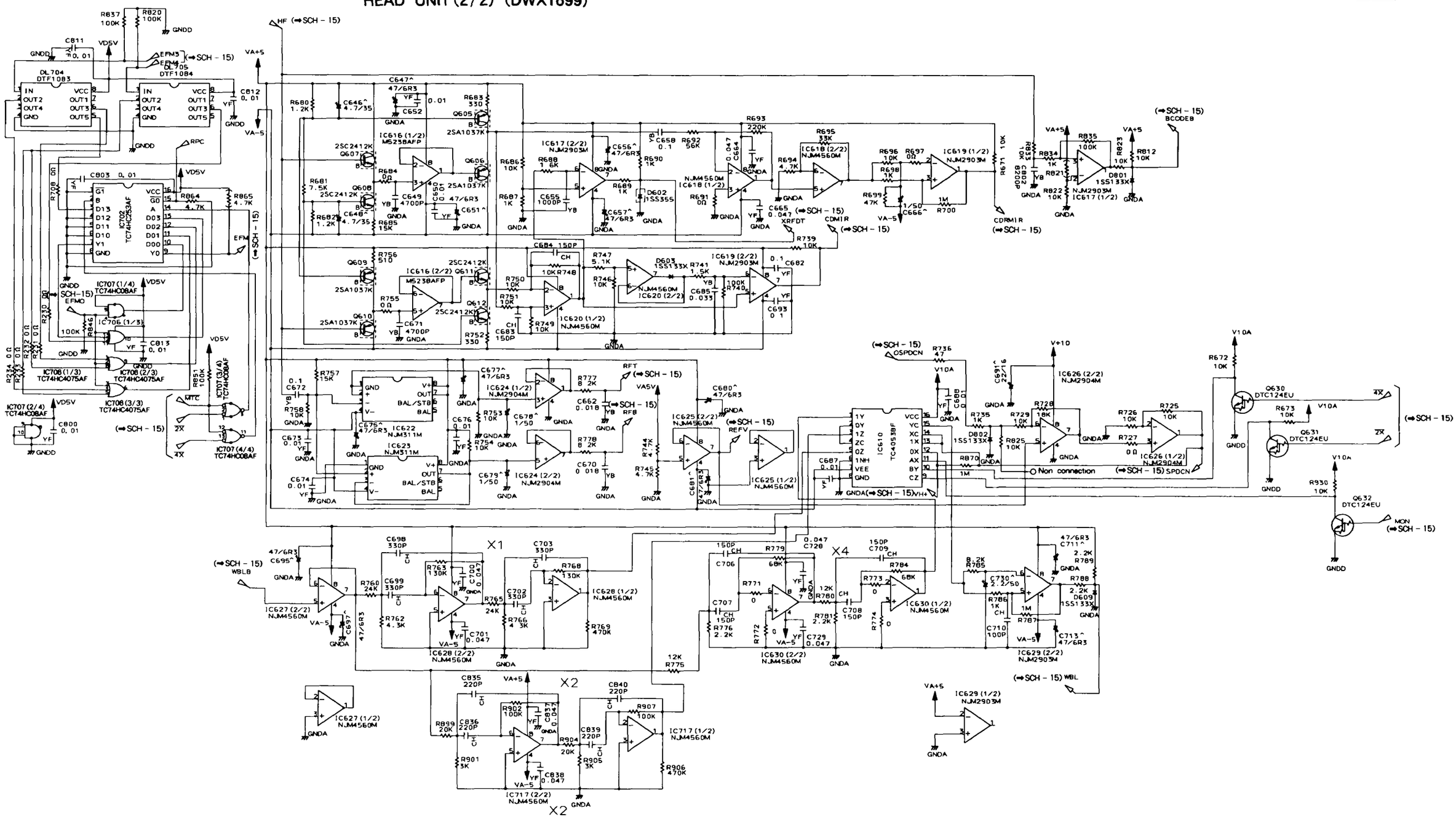
IC15 IC12
IC19 Q101 Q102 IC113 Q110 Q107 Q9
IC17 IC16 IC110
Q103 IC18
Q108 Q105 Q104
IC103
Q10
IC619
IC617
IC620 IC100
IC20
IC623 IC622
Q611 Q612 IC101
IC624 Q610 IC616
Q606 IC707 IC707 IC703
IC629
Q607 Q608
IC721 Q609 IC628 IC618
Q631 IC717
IC720 IC108 Q630 IC627 IC625
IC610
IC630 IC631 IC626
Q201
Q200
Q202

- This PCB is double sided.
- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.

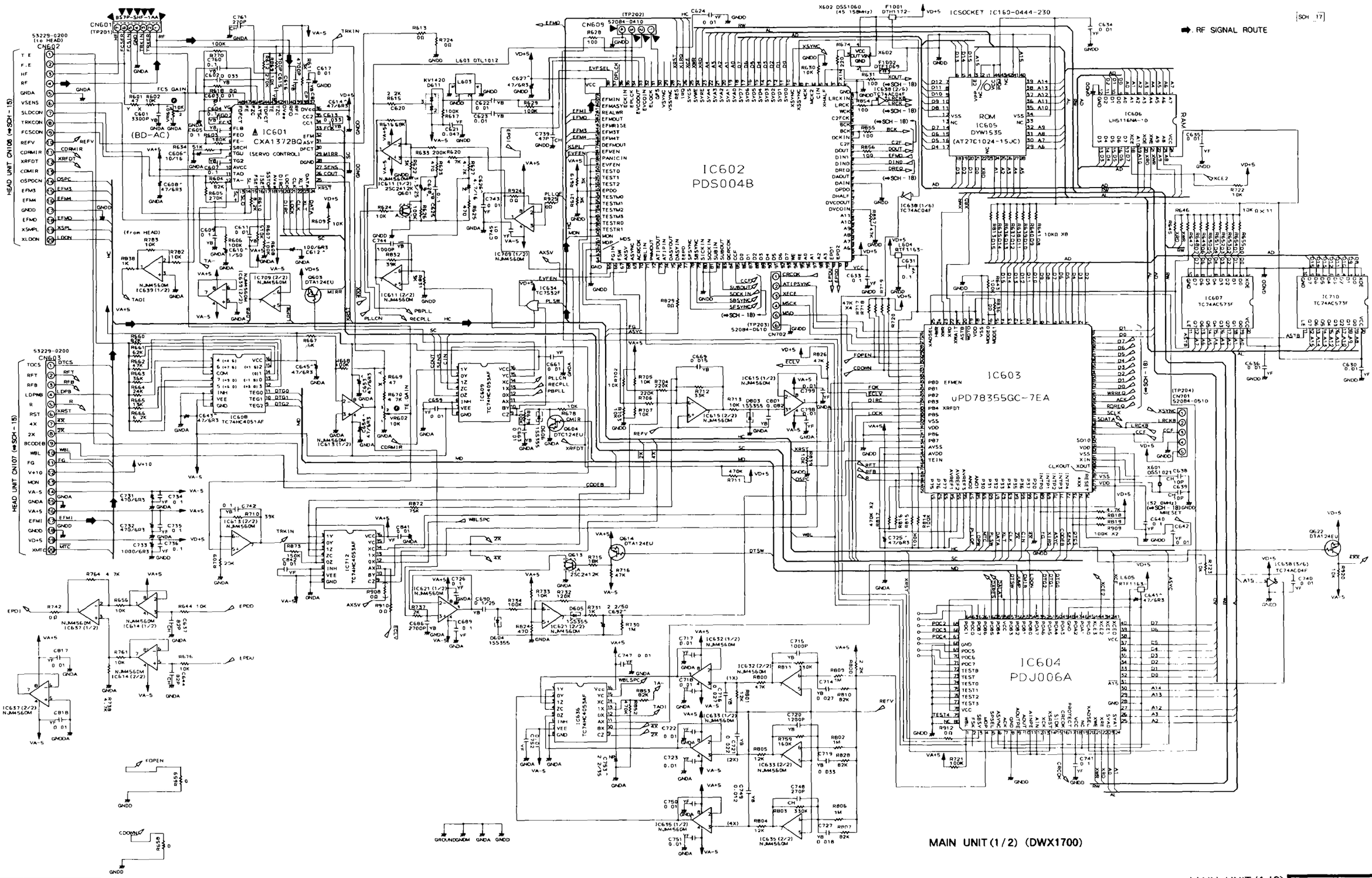
5.16 HEAD UNIT (2/2)

HEAD UNIT (2/2) (DWX1699)

SCH-16

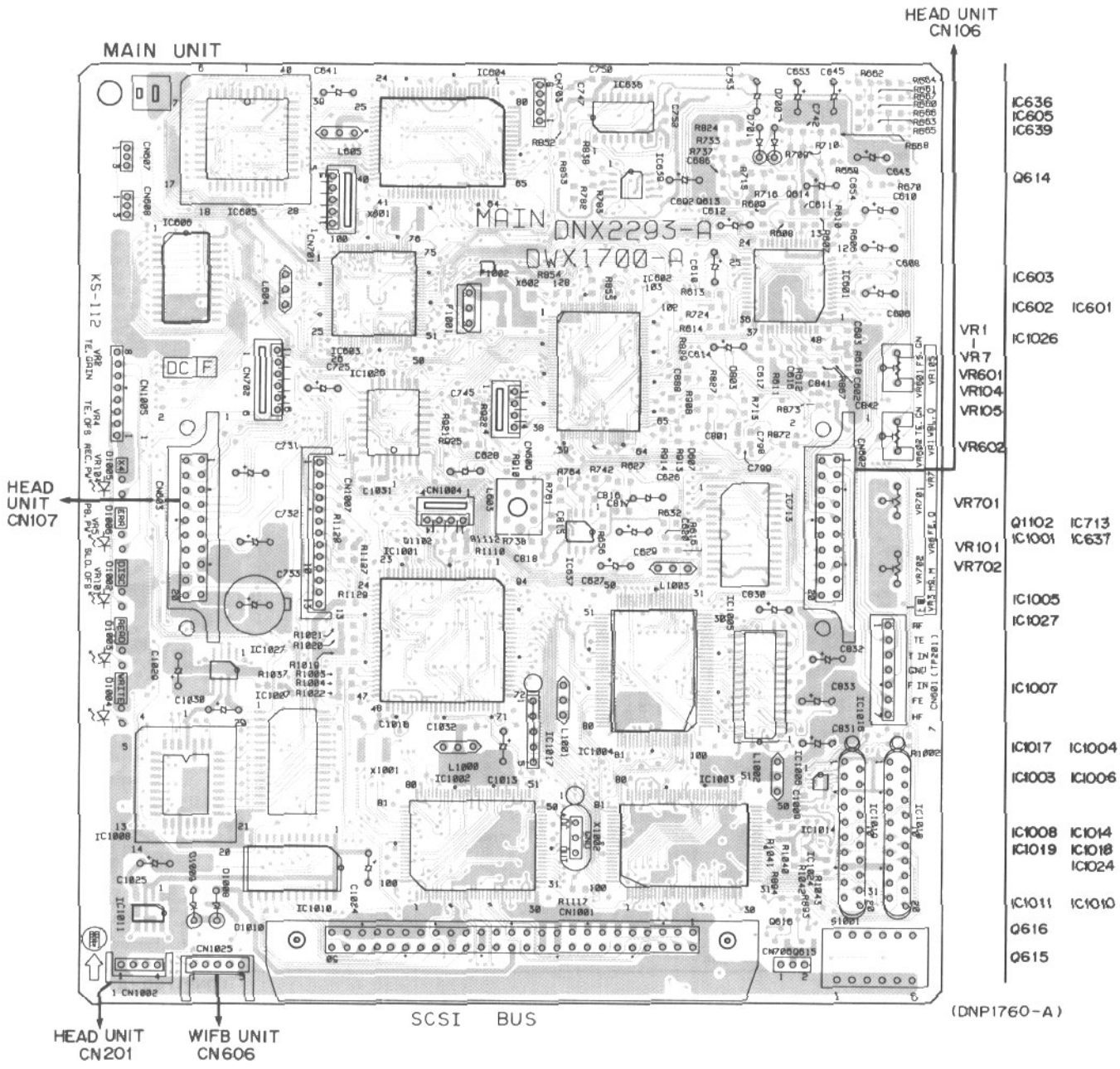


5.17 MAIN UNIT (1/2)

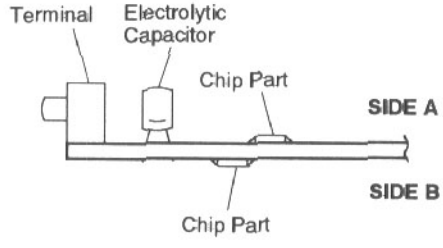


SIDE A

PCB – 12



- This PCB is double sided.
- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.



SIDE B

MAIN UNIT

IC608 IC635

IC613 IC612
IC621 IC632

Q604

IC634 IC607

Q603

IC714 IC709
IC607 IC710
IC638
IC615 Q622

IC614
Q601 Q1004

IC611 IC1101
IC1021
IC1009 Q1001

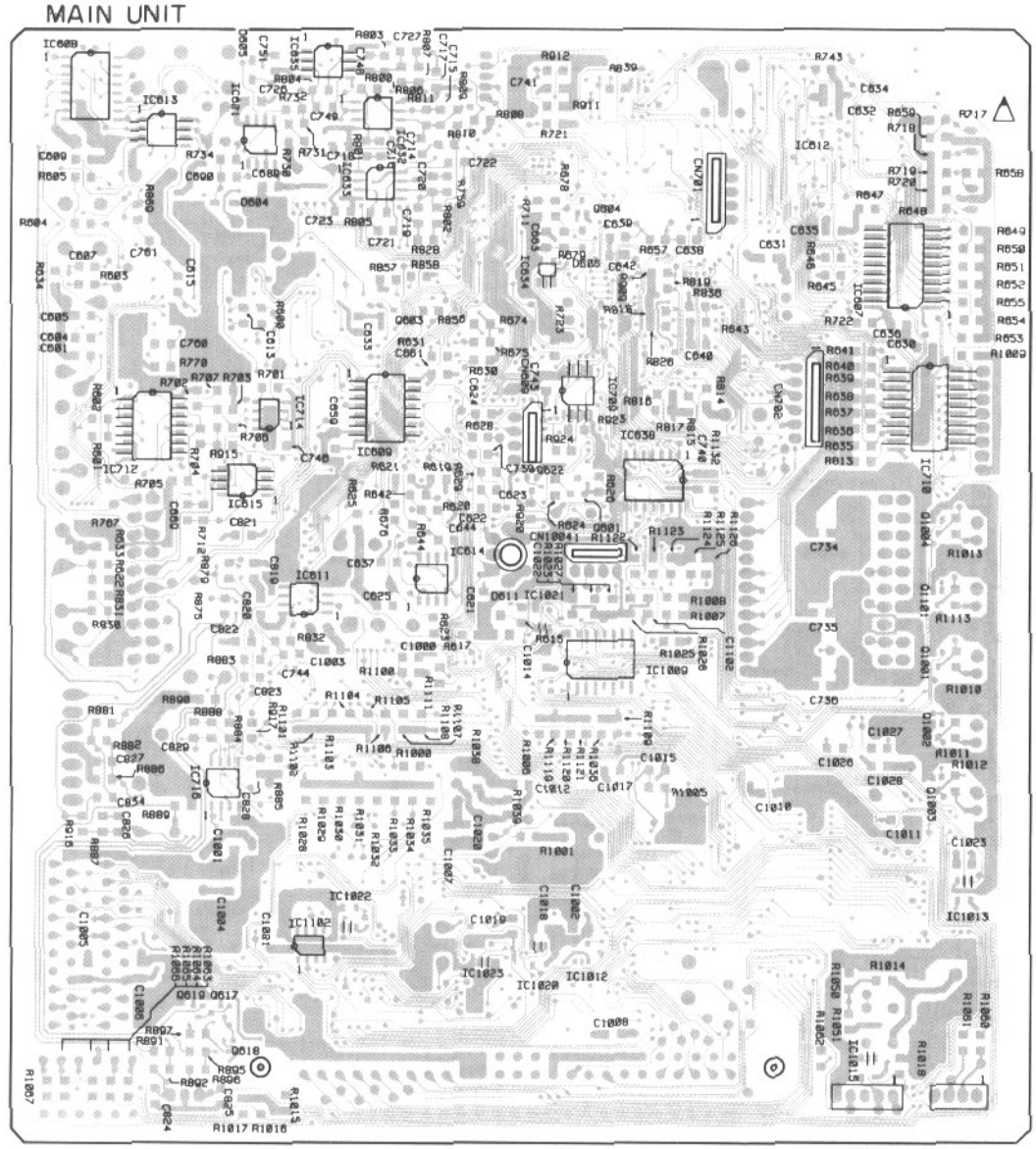
Q1002

IC716 Q1003

IC1022
IC1102

IC1012
IC1023 IC1020

Q619 Q617
Q618
IC1015

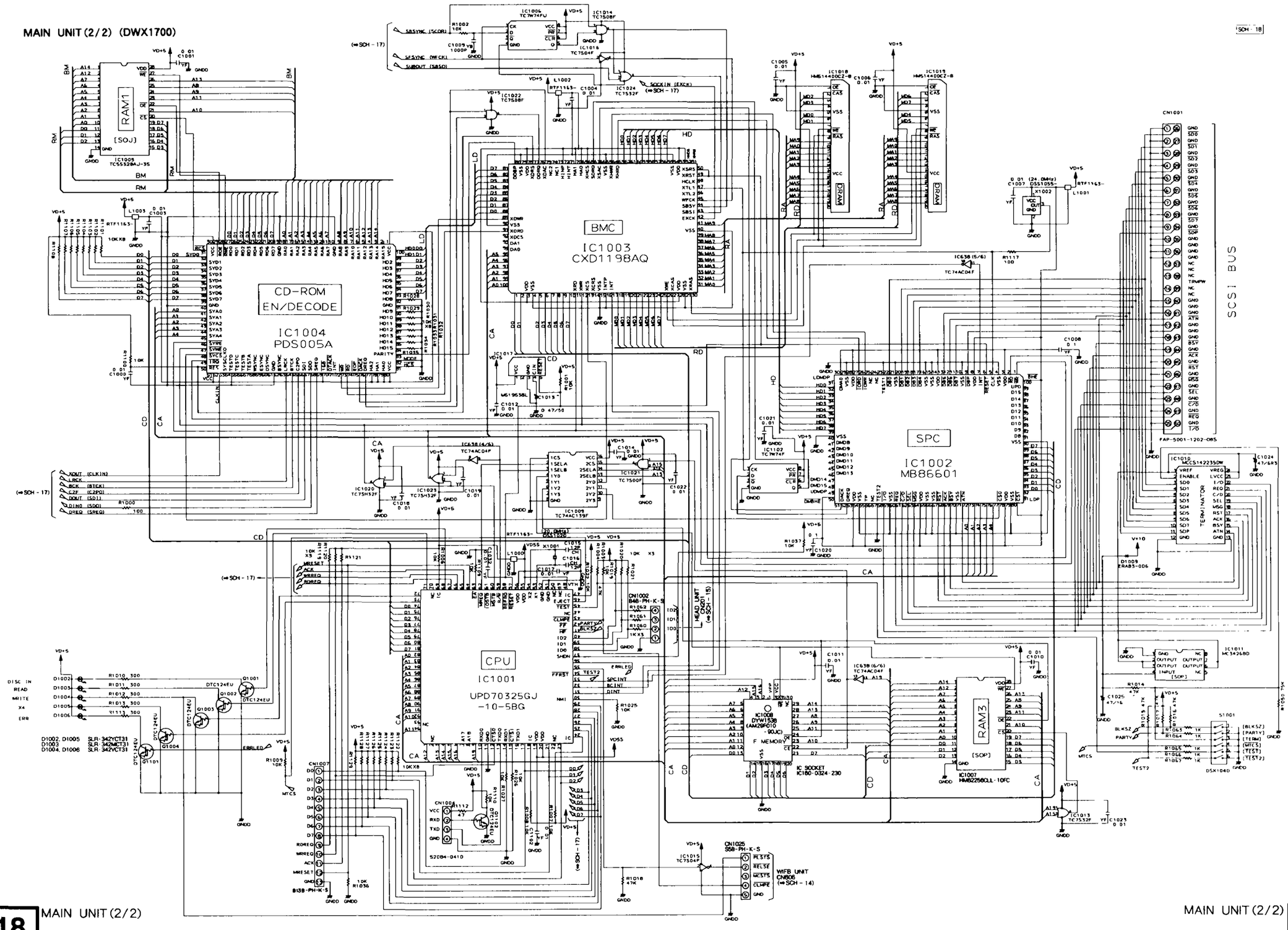


(DNP1760-A)

- This PCB is double sided.
- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.

5.18 MAIN UNIT (2/2)

MAIN UNIT (2/2) (DWX1700)



6. PCB PARTS LIST

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits(any digit apart from 0), such as 560 ohm and 47k ohm(tolerance is shown by J=5%, and K=10%).

560 Ω → 56 × 10¹ → 561 ····· RD1/4PU 5 6 1 J
47k Ω → 47 × 10³ → 473 ····· RD1/4PU 4 7 3 J
0.5 Ω → 0R5 ····· RN2H 0 R 5 K
1 Ω → 1R0 ····· RS1P 1 R 0 K

Ex.2 When there are 3 effective digits(such as in high precision metal film resistors).

5.62k Ω → 562 × 10¹ → 5621 ····· RN1/4PC 5 6 2 1 F

LIST OF UNITS

Mark	No.	Description	Part No.
		PWDB UNIT	DWM2023
		├ PWR1 UNIT	DWR1254
		├ PWR2 UNIT	DWR1255
		├ PWSB UNIT	DWR1256
		├ VMDB UNIT	DWX1724
		└ ENCB UNIT	DWX1725
		ETCB UNIT	DWM2022
		├ KEYB UNIT	DWX1711
		├ SSB1 UNIT	DWX1712
		├ SSB2 UNIT	DWX1713
		├ MDO1 UNIT	DWX1714
		├ MDO2 UNIT	DWX1715
		├ MOCB UNIT	DWX1716
		├ KICB UNIT	DWX1717
		├ PLED UNIT	DWX1718
		├ IDSB UNIT	DWX1719
		├ MSTB UNIT	DWX1720
		└ MSDB UNIT	DWX1721
		SWSE UNIT	DWM2021
		├ DCMB UNIT	DWX1706
		├ DSEB UNIT	DWX1707
		├ DNSE UNIT	DWX1708
		└ UPSE UNIT	DWX1709
		MMFB UNIT	DWM2020
		├ MMCB UNIT	DWX1704
		└ FCNB UNIT	DWX1705
		PWRB ASSY(DRM-1004XR ONLY)	DWR1251
		PWRB ASSY	DWR1266
		MAINB ASSY(DR-D4XI AND DR-D134X ONLY)	DWM1546
NSP		├ INSW UNIT	DWS1246
		└ MOTHER UNIT	DWX1674
		RIFB UNIT(DR-D4XI AND DR-D134X ONLY)	DWX1701
		COMP UNIT(DR-R4XI ONLY)	DWM2018
		├ HEAD UNIT	DWX1699
		└ MAIN UNIT	DWX1700
		WIFB UNIT(DR-R4XI ONLY)	DWX1702
		DRIVE UNIT(DR-R4XI ONLY)	DWX1552
		SERVO MECHANISM ASSY(DR-R4XI ONLY)	DXB1530
		├ TOC BOARD ASSY	DWX1538
		└ FG BOARD ASSY	DWX1539

Mark	No.	Description		Part No.
PWDB UNIT				
OTHERS				
		PC BOARD PWDB		DNP1764
PWR1 UNIT				
OTHERS				
⚠		CN201, CN203-CN206	2P-VH CONNECTOR	B2P3-VH
⚠		CN202, CN210	7P-VH CONNECTOR	B7P-VH
⚠		CN209	7P-VH CONNECTOR	B7P-VH-R
		H1-H4	FUSE HOLDER	RKR1002
PWR2 UNIT				
SEMICONDUCTORS				
⚠		IC252		ICP-N38
⚠		IC251		LM2576T-5.0/LB03
		Q257		2SA1286
		Q254		2SC2458
		Q251		2SC3246
		Q252, Q255		DTA124ES
		Q253, Q256, Q258		DTC124ES
		D255, D258		11EQS06
		D259, D260		1SS254
		D257		F10KQ40
		D256		MTZJ6.8B
⚠		D251, D253, D254		RBA-406B
⚠		D252		S2VB20-F1
COILS				
		L251, L252	CHOKE COIL	DTH1178
RELAYS				
⚠		RY251, RY252		DSR1012
CAPACITORS				
		C266		CEAS221M35
		C256, C257		CEAS222M16
		C272		CEAS471M35
		C251, C254, C255, C258-C261		CKCYF103Z50
		C263, C267-C269, C271, C273		CKCYF103Z50

Mark	No.	Description	Part No.
	C265, C270		CKCYF473Z50
	C252	(6800pF/35V)	DCH1003
	C264	(8200pF/25V)	DCH1042
	C253	(1000pF/100V)	DCH1081
	C262	(8200pF/50V)	DCH1082
RESISTORS			
	All Resistors		RD1/4PU□□□J
OTHERS			
		HEAT SINK(L)	ANH-575
	CN253	2P-VH CONNECTOR	B2P3-VH
	CN257	3P TOP POST	B3B-EH
	CN256	KR CONNECTOR 3P	B3B-PH-K-S
	CN255	KR CONNECTOR	B3B-PH-K-Y
	CN254	4P TOP POST(VH)	B4P-VH
		PCB BINDER	DEF1015
		HEAT SINK	DNG1068
	H51-H70	FUSE HOLDER	RKR1002
	KN251, KN252	EARTH METAL FITTING	VNF1084

PWSB UNIT

Mark	No.	Description	Part No.
SWITCH			
⚠	S201		DSA1020
CAPACITORS			
⚠	C201, C202	(0.01μF/AC250V)	ACG7020
OTHERS			
⚠	CN211	7P-VH CONNECTOR	B7P-VH

VMDB UNIT

Mark	No.	Description	Part No.
SEMICONDUCTORS			
⚠	IC410		4AM12
	IC414		BA10339
	IC406, IC413		BA10393
	IC408		HD74HC11P
	IC411		MC74HC00AN
	IC407		MC74HC32AN
	IC403-IC405, IC412		NJM4565D-A
	IC401		TC4077BP
	IC402		TC74HC123AP
	IC409		TC74HC14AP
	Q401, Q402, Q404, Q406		2SA1048
	Q408, Q409		2SA1048
	Q403, Q405		2SC2458
⚠	Q412		2SD2395
	Q411		DTA124ES
	Q407, Q410		DTC124ES
	D417		1SS252
	D401, D405-D408, D413, D414		1SS254
	D418, D419		1SS254
	D409, D410		MTZJ7.5B

Mark	No.	Description	Part No.
CAPACITORS			
	C452		CEAS010M50
	C401, C402, C454		CEAS101M16
	C455		CEAS220M50
	C457		CEASR47M50
	C427-C430		CFTXA152J50
	C412, C413		CFTXA224J50
	C418		CFTXA472J50
	C415		CFTXA474J50
	C408, C409		CFTXA823J50
	C423, C424		CKPUYB101K50
	C403, C407, C410, C411		CKPUYF223Z25
	C416, C417, C419-C422		CKPUYF223Z25
	C425, C426, C431, C444		CKPUYF223Z25
	C448-C451, C458		CKPUYF223Z25
	C406		CQMA102J50
	C404, C405, C453		CQMA152J50
	C456		CQMA223J50
	C440, C441		CQMA473J50
RESISTORS			
	R460, R461		RD1/2LMF4R7J
⚠	R462, R463		RS3LMFR22J
	VR401		VRTB6VS103
	Other Resistors		RD1/4PU□□□J
OTHERS			
	CN406	KR CONNECTOR	B2B-PH-K-S
	CN404	2P TOP POST	B2P-SHF-1AA
	CN401	3P TOP POST(EH)	B3B-EH
	CN402	KR CONNECTOR	B4B-PH-K-S
	CN405	4P TOP POST(VH)	B4P-VH
	KN401, KN402	EARTH METAL FITTING	VNF1084

ENCB UNIT

Mark	No.	Description	Part No.
SEMICONDUCTOR			
	IC417		GP1A30R
CAPACITOR			
	C464		CKPUYF223Z25
RESISTORS			
	All Resistors		RD1/4PU□□□J
OTHERS			
	CN407	KR CONNECTOR	S4B-PH-K-S

ETCB UNIT

Mark	No.	Description	Part No.
OTHERS			
	PC BOARD ETCB		DNP1763

Mark	No.	Description	Part No.

KEYB UNIT

SEMICONDUCTORS

	IC352		BA823
	IC351		MC14489P
	D351, D352		LB-303MK
	D354-D359		SLR-342MGT31

SWITCHES

	S351-S363		DSG1056

CAPACITORS

	C353		CKPUYF103Z25
	C351, C352, C362		CKPUYF223Z25

RESISTORS

	All Resistors		RD1/4PU□□□J

SSB1 UNIT

SEMICONDUCTORS

	IC301		HD74HC165P
	Q301, Q302		DTC124ES
	D301-D308		MTZJ8.2B

SWITCH

	S301		DSX1039

CAPACITOR

	C302		CKPUYF223Z25

RESISTORS

	R301		RA8S103J
	Other Resistors		RD1/4PU□□□J

OTHERS

	CN351	MT CONNECTOR 15P	1-173979-5
	CN307	KR CONNECTOR	S10B-PH-K-S

SSB2 UNIT

SEMICONDUCTOR

	IC302		HD74HC165P

CAPACITORS

	C301		CEAS101M10
	C303		CKPUYF223Z25
	C304		CEAS220M10

RESISTORS

	R303		RA8S103J
	VR301	(2kΩ)	DCP1021
	Other Resistors		RD1/4PU□□□J

OTHERS

	CN304	KR CONNECTOR	B2B-PH-K-S
	CN305	KR CONNECTOR 3P	B3B-PH-K-S
	CN311	KR CONNECTOR	B3B-PH-K-Y
	KN301	EARTH METAL FITTING	VNF1084

Mark	No.	Description	Part No.

MDO1 UNIT

SEMICONDUCTOR

	D321		SIR-56SB3H

OTHERS

	CN313	KR CONNECTOR	S2B-PH-K-S

MDO2 UNIT

CAPACITOR

	C321		CKPUYF223Z25

OTHERS

	CN314	KR CONNECTOR 3P	B3B-PH-K-S
	IC321	REMOTE RECEIVER UNIT	GP1U27X

MOCB UNIT

SEMICONDUCTOR

	D325		SLR-342MGT31

SWITCH

	S364		DSG1056

RESISTORS

	All Resistors		RD1/4PU□□□J

OTHERS

	CN315	KR CONNECTOR	S4B-PH-K-S

KICB UNIT

OTHERS

	CN319	MT CONNECTOR 15P	1-173981-5
	CN316	KR CONNECTOR	B2B-PH-K-S
	CN306	KR CONNECTOR	B4B-PH-K-S

PLED UNIT

SEMICONDUCTORS

	D322, D360		SLR-342MGT31

RESISTORS

	All Resistors		RD1/4PU□□□J

OTHERS

	CN312	KR CONNECTOR	S2B-PH-K-S

IDSB UNIT

SEMICONDUCTORS

	IC901, IC902		HD74HC165P

Mark	No.	Description	Part No.
SWITCH			
	S905		DSX1046
CAPACITORS			
	C901, C902		CKPUYF223Z25
RESISTORS			
	R905, R906		RA8S104J
	Other Resistors		RD1/4PU□□□J
OTHERS			
	CN901	KR CONNECTOR	S4B-PH-K-R
	CN905	KR CONNECTOR	S5B-PH-K-S
	KN901	EARTH METAL FITTING	VNF1084

MSTB UNIT

SEMICONDUCTORS			
	Q801, Q802		DTC114ES
RESISTORS			
	All Resistors		RD1/4PU□□□J
OTHERS			
	CN804	KR CONNECTOR	S2B-PH-K-S
	CN805	KR CONNECTOR	S3B-PH-K-S

MSDB UNIT

SEMICONDUCTOR			
	D801		GP1A51HR
CAPACITOR			
	C801		CKPUYF223Z25
RESISTORS			
	Other Resistors		RD1/4PU□□□J
OTHERS			
	CN806	KR CONNECTOR	S3B-PH-K-S

SWSE UNIT

OTHERS			
	PC BOARD SWSE		DNP1762

DCMB UNIT

SEMICONDUCTORS			
	IC871-IC875		TC7S14F
	Q877		2SA1037K
	D877		1SS355
	D876		GL381
	D871-D875		GP1S24
CAPACITORS			
	C871, C872		CKSQYF104Z50

Mark	No.	Description	Part No.
RESISTORS			
	R871	(100Ω)	DCN1039
	Other Resistors		RS1/10S□□□J
OTHERS			
	CN874	MT CONNECTOR 3P	173981-3
	CN875	MT CONNECTOR 4P	173981-4
	CN873	AMP CONNECTOR 3P	4-173981-3
	CN871	FPC CONNECTOR	52030-2010
	CN872	KR CONNECTOR 3P	B3B-PH-K-S
	J871	EARTH LEAD JUMPER	DE005WE0
		LED HOLDER	RNK1795

DSEB UNIT

SEMICONDUCTORS			
	IC851		TC7S04F
	Q851		PT4850F
CAPACITOR			
	C851		CKSQYF104Z50
RESISTORS			
	VR851	CHIP VOLUME(100kΩ)	DCP1081
	Other Resistors		RS1/10S□□□J
OTHERS			
	J851	SMALL CONNECTOR	PG03MR4E22

DNSE UNIT

SEMICONDUCTORS			
	D841, D842		GP1A15
CAPACITORS			
	C841, C842		CKSQYF104Z50
RESISTORS			
	All Resistors		RS1/10S□□□J
OTHERS			
	J841	SMALL CONNECTOR	PG04MR-E35

UPSE UNIT

SEMICONDUCTOR			
	D831		GP1A15
CAPACITOR			
	C831		CKSQYF104Z50
RESISTORS			
	All Resistors		RS1/10S□□□J
OTHERS			
	J831	SMALL CONNECTOR	PG03MR-E35

Mark	No.	Description	Part No.
MMFB UNIT			
OTHERS			
	PC BOARD MMFB		DNP1761
MMCB UNIT			
SEMICONDUCTORS			
	IC132		BA10393F
	IC120		BH9595FP-Y
	IC112		HD6415108F10
	IC110		HM62256BLFP-8T
⚠	IC135, IC136		ICP-N15
	IC117		M62008FP
	IC119		NCR53C90A-80QFP
	IC115		NM93C66EM8
⚠	IC116, IC121-IC125		TA7291P
	IC134		TC4W53F
	IC101, IC104		TC74AC04F
	IC103		TC74AC08F
	IC109		TC74AC139F
	IC102		TC74AC32F
	IC107, IC108		TC74AC574F
	IC106, IC129-IC131		TC74HC125AF
	IC113, IC118		TC74HC138AF
	IC105, IC126-IC128		TC74HC32AF
	IC133		TC7S86F
	Q103, Q105		2SA1037K
	Q101, Q104, Q106		2SC2412K
	Q102		DTC124EK
	D101-D108, D146		1SS355
	D126		D1FS4
	D134-D145		RB400D
	D124		UDZ12B
	D109		UDZ18B
	D128		UDZ4.7B
	D129-D133		UDZ7.5B
	D110-D123, D125, D127		UDZ8.2B
FILTERS			
⚠	F101	EMI FILTER	DTH1122
	F102-F104	EMI FILTER	VTH1012
SWITCH			
	S101		DSX1044
CAPACITORS			
	C118, C119		CCSQCH100D50
	C194		CCSQCH470J50
	C184		CCSQCH471J50
	C190, C191		CEANP010M50
	C103		CEAS010M50
	C142		CEAS100M16
	C102		CEAS100M50
	C112, C114, C145, C146		CEAS101M10
	C122, C123, C129, C175		CEAS101M16
	C176		CEAS101M25
	C131		CEAS101M50
	C106		CEAS331M6R3
	C149		CEAS470M10
	C187		CEASR33M50
	C136		CEHAQ101M50
	C186		CEHAQ4R7M50
	C124-C127, C157, C158		CKSQYF103Z50
	C160, C161, C164-C167		CKSQYF103Z50
	C170, C171		CKSQYF103Z50
	C101, C104, C105, C107-C111		CKSQYF104Z50
	C113, C115-C117, C120, C121		CKSQYF104Z50
	C128, C130, C132-C135		CKSQYF104Z50
	C137-C141, C143, C144		CKSQYF104Z50
	C147, C148, C150-C156		CKSQYF104Z50
	C172-C174, C177, C183, C185		CKSQYF104Z50
	C188, C189, C192, C193		CKSQYF104Z50
	C178-C182		CKSQYF222Z50
	C159, C162, C163, C168, C169		CKSQYF223Z50
RESISTORS			
	R106-R108, R117-R119, R127	(100Ω)	DCN1039
	R133, R136, R139	(100Ω)	DCN1039
	R111, R113, R116, R120-R125	(47kΩ)	OCN1020
	R128, R132	(47kΩ)	OCN1020
	R181		RS1/10S102F
	R182		RS1/10S103F
	R177-R179		RS1/10S104F
	R183		RS1/10S223F
	R180		RS1/10S333F
	VR102	(10kΩ)	PCP1042
	Other Resistors		RS1/10S□□□J
OTHERS			
	CN114	FPC CONNECTOR	52030-2010
	CN110	KR CONNECTOR	B11B-PH-K-R
		PCB BINDER	DEF1015
		IC SOCKET(FOR IC137)	DKH1014
	CN107, CN108		DKP3115
		L TYPE DIP CONNECTOR 50	
		HEAT SINK	DNG1069
	X102	CRYSTAL RESONATOR (25.0MHz)	DSS1082
⚠	FU101	FUSE(1A/125V)	OEK1004
	X101	CRYSTAL RESONATOR (19.6608MHz)	RSS1040
	CN106	KR CONNECTOR	S5B-PH-K-S
FCNB UNIT			
SEMICONDUCTORS			
	D861		SLR-342MGT31
	D862		SLR-342VCT31
RESISTORS			
	All Resistors		RS1/10S□□□J
OTHERS			
	CN861, CN862	FPC CONNECTOR	52043-2010

Mark	No.	Description	Part No.
PWRB ASSY (DWR1251)			
SEMICONDUCTORS			
⚠	IC201		DIC1001
⚠	IC202, IC203		DIC1002
⚠	Q101		DTR1001
⚠	Q102, Q103		DTR1002
RESISTORS			
⚠	R102	(1.8Ω/5W)	DCN1029
⚠	R108	(0.22Ω/1W)	DCN1030
OTHERS			
⚠	F101	(2.5A/250V)	DEK1056
⚠	F102	(2.5A/250V)	DEK1057
PWRB ASSY (DWR1266)			
	No Service Part.		
INSW UNIT			
SWITCH			
	S901		DSG1016
OTHERS			
	CN901	KR CONNECTOR	S4B-PH-K-S
MOTHER UNIT			
SEMICONDUCTORS			
	IC203		BA10393F
	IC401		BA6797FP
	IC501		BA6840FP
	IC803		BH9595FP-Y
	IC702		DYW1539
⚠	IC804		ICP-S1.0
	IC802		KM681000BLG-5
	IC801		LC89512W-V79
	IC713		M51953BFP
	IC701		PD6170A
	IC204		TA2066F
	IC404		TC4W53F
	IC707		TC74HC138AF
	IC708, IC709		TC74HC573AF
	IC703		TC7S04F
	IC301		TC9405F
	IC402, IC405		XLA4558F-P
	IC202		XLA4560F
	Q401		2SA1576A
	Q206		2SB1189
	Q402, Q403		DTA124EU
	Q701, Q702		DTC124EU
	D801		EC10QS04
	D702		SLR-342DUTB7

Mark	No.	Description	Part No.
COILS AND FILTERS			
	F301, F801	EMI FILTER	DTH1122
	L301, L801	CHIP COIL(1.2μH)	DTL1015
	L104	CHIP COIL(22mH)	OTL1009
	F101, F103	EMI FILTER	VTH1033
CAPACITORS			
	C314, C807		CCSRCH100D50
	C302		CCSRCH101J50
	C427		CCSRCH151J50
	C809		CCSRCH180J50
	C316		CCSRCH220J50
	C428		CCSRCH270J50
	C222, C228, C713, C714		CCSRCH390J50
	C244		CCSRCH470J50
	C501-C503		CEAL100M16
	C105		CEAL101M6R3
	C424, C805		CEAL220M16
	C510		CEAL470M16
	C231		CEAL470M6R3
	C107		CEAS101M16
	C404		CEV470M16
	C241, C407		CEV470M6R3
	C315, C720, C808		CKSRYB102K50
	C227, C230, C304-C307, C320		CKSRYB103K50
	C711, C712		CKSRYB103K50
	C425		CKSRYB104K16
	C309, C310, C414, C415, C512		CKSRYB153K50
	C426		CKSRYB223K25
	C506, C508		CKSRYB822K50
	C101, C103, C112, C201, C202		CKSRYF104Z25
	C238, C242, C243, C246, C301		CKSRYF104Z25
	C303, C308, C312, C321, C322		CKSRYF104Z25
	C390, C391, C403, C416, C419		CKSRYF104Z25
	C423, C504, C505, C511		CKSRYF104Z25
	C701-C704, C715, C718, C721		CKSRYF104Z25
	C801-C803, C806, C831		CKSRYF104Z25
	C405, C417, C418		CKSRYF473Z25
	C311		CKSYF154Z25
	C239	(47μF/6.3V)	DCH1074
RESISTORS			
	R253	(22Ω)	DCN1050
	R403	(1Ω)	DCN1051
	R506, R507	(0.47Ω)	OCN1024
	R276, R742, R748, R751		RS1/16S000J
	R201, R202		RS1/16S100J
	R317, R323, R743, R744		RS1/16S101J
	R801		RS1/16S102J
	R402, R441-R443		RS1/16S103F
	R244, R245, R275, R302		RS1/16S103J
	R307, R308, R318, R514, R533		RS1/16S103J
	R537, R702-R708, R713, R714		RS1/16S103J
	R727-R730, R732, R736		RS1/16S103J
	R738-R740, R746, R747		RS1/16S103J
	R254, R272, R325		RS1/16S104J
	R725		RS1/16S105J

Mark	No.	Description	Part No.
	R502-R504		RS1/16S120J
	R278		RS1/16S151J
	R408, R436		RS1/16S153F
	R274, R324		RS1/16S153J
	R246		RS1/16S154J
	R232, R236, R266, R267, R280		RS1/16S163J
	R737		RS1/16S201J
	R231, R233, R460		RS1/16S202J
	R458, R459		RS1/16S203F
	R426, R427		RS1/16S203J
	R303, R437		RS1/16S204J
	R247, R536		RS1/16S222J
	R313		RS1/16S223J
	R304		RS1/16S225J
	R899		RS1/16S301J
	R309		RS1/16S302J
	R424, R425		RS1/16S303J
	R305		RS1/16S333J
	R461		RS1/16S392F
	R279, R312		RS1/16S392J
	R501, R510		RS1/16S470J
	R448, R449		RS1/16S472F
	R301, R538		RS1/16S473J
	R311		RS1/16S511J
	R444-R446, R454, R456, R457		RS1/16S513F
	R264, R462		RS1/16S513J
	R802		RS1/16S514J
	R450, R452		RS1/16S562F
	R422, R423		RS1/16S562J
	R447, R451		RS1/16S622F
	R438		RS1/16S683J
	R455		RS1/16S752F
	R513		RS1/16S753J
	R256-R259		RS1/16S822J
	R260, R261		RS1/16S823F
	VR201 (2.2kΩ)		PCP1025
	Other Resistors		RS1/10S□□□J

OTHERS

	CN201	FLEXIBLE CONNECTOR	52207-1690
	CN706	PIN HEADER(14P)	9022B-14A
	CN101	SCSI POWER SUPPLY CONNECTOR	9047B-54
	X301	CRYSTAL RESONATOR (33.8688MHz)	ASS7000
	CN501	CONNECTOR 11P	B11B-ZR-SM3F
	CN401	KR CONNECTOR	B4B-PH-K-S
	X701	CERAMIC RESONATOR(4MHz)	CSAC4.00MGCM
		IC SOCKET 40P	DKH1016
	X801	CRYSTAL RESONATOR (37.2557MHz)	DSS1063
	CN703	CONNECTOR 3P	S3B-ZR-SM3A

RIFB UNIT

SEMICONDUCTORS

	D501, D502		1SS254

Mark	No.	Description	Part No.

SWITCHES

	S503		DSX-104
	S502		DSX1044
	S501		DSX1046

RESISTORS

	All Resistors		RD1/4PU□□□J

OTHERS

	CN501	KR CONNECTOR	B4B-PH-K-S
		PCB BINDER	DEF1015
		PC BOARD RIFB	DNP1766
	CN503	KR CONNECTOR	S2B-PH-K-S
	CN504	KR CONNECTOR	S3B-PH-K-S
		EARTH METAL FITTING	VNF-091

COMP UNIT

OTHERS

		PC BOARD COMP	DNP1760

HEAD UNIT

SEMICONDUCTORS

⚠	IC124		ICP-N20
⚠	IC116		LA6517
	IC11, IC14		LM6364M
	IC616		M5238AFP
	IC617, IC619, IC629		NJM2903M
	IC624, IC626		NJM2904M
	IC622, IC623		NJM311M
	IC108, IC110, IC1104, IC113, IC12		NJM4560M
	IC121, IC16-IC19, IC618, IC620		NJM4560M
	IC625, IC627, IC628, IC630, IC717		NJM4560M
	IC122		NJM78L02A
	IC123		NJM79L03A
	IC118, IC119		PA6004A
⚠	IC109		TA8410AK
	IC610		TC4053BF
	IC707		TC74HC08AF
	IC702		TC74HC253AF
	IC706		TC74HC4075AF
	IC711		TC74HCU04AF
	IC103		TC7S08F
	IC20		TC7S32F
	IC111, IC15		UPC811G2
	IC117		UPC812G2
	Q115, Q116, Q200, Q605, Q606		2SA1037K
	Q609, Q610		2SA1037K
	Q102-Q106, Q110		2SA1461
	Q10, Q107, Q108, Q9		2SA1462
	Q202		2SB1114
	Q101, Q607, Q608, Q611, Q612		2SC2412K
	Q203		2SJ146
	Q201, Q630-Q632		DTC124EU
	D603, D609, D801, D802		1SS133X
	D101, D201, D210, D602		1SS355
	D202, D204		21DQ04
	D200		ERA83-006

Mark	No.	Description	Part No.
COIL			
	L102	EMI FILTER	RTF1163
CAPACITORS			
	C2, C410, C412, C414, C416		CCSQCH020C50
	C420, C422, C424		CCSQCH020C50
	C16-C19		CCSQCH030C50
	C251-C254		CCSQCH100D50
	C710		CCSQCH101J50
	C683, C684, C706-C709		CCSQCH151J50
	C1, C14, C15, C202		CCSQCH220J50
	C835, C836, C839, C840		CCSQCH221J50
	C24		CCSQCH330J50
	C698, C699, C702, C703		CCSQCH331J50
	C411, C413, C415, C417, C73		CCSQCH391J50
	C30		CCSQCH470J50
	C21		CCSQCH680J50
	C22, C23		CCSQCH820J50
	C666, C678, C679		CEAL010M50
	C134, C230, C231, C76		CEAL100M16
	C691		CEAL220M16
	C730		CEAL2R2M50
	C151, C153, C165, C167, C181		CEAL470M16
	C225		CEAL470M16
	C647, C651, C656, C657, C675		CEAL470M6R3
	C677, C680, C681, C695, C697		CEAL470M6R3
	C711, C713		CEAL470M6R3
	C646, C648		CEAL4R7M35
	C129		CEAS101M6R3
	C190, C191		CEAS102M6R3
	C160, C95, C97		CFTYA474J50
	C655		CKSQYB102K50
	C130, C131, C141, C221, C222		CKSQYB103K50
	C194, C203, C658, C672, C70		CKSQYB104K25
	C72, C98, C99		CKSQYB104K25
	C227		CKSQYB182K50
	C662, C670		CKSQYB183K50
	C421, C423		CKSQYB332K50
	C162, C163, C685		CKSQYB333K25
	C649, C671, C96		CKSQYB472K50
	C150, C155, C161		CKSQYB473K50
	C802		CKSQYB822K50
	C11-C13, C135, C139, C152		CKSQYF103Z50
	C154, C164, C166, C168, C172		CKSQYF103Z50
	C176, C20, C200, C201		CKSQYF103Z50
	C204-C220, C224, C228, C229		CKSQYF103Z50
	C418, C419, C426, C427, C650		CKSQYF103Z50
	C652, C673, C674, C676		CKSQYF103Z50
	C687, C688, C800, C803		CKSQYF103Z50
	C811-C813		CKSQYF103Z50
	C132, C157, C159, C196, C197		CKSQYF104Z25
	C682, C693		CKSQYF104Z25
	C223, C664, C665, C700, C701		CKSQYF473Z50
	C728, C729, C837, C838		CKSQYF473Z50
RESISTORS			
	R226	(2.2kΩ)	DCN1028
	R129, R130	(100Ω)	DCN1055
	R209		RD1/2PM2R7J
	VR1, VR101, VR104, VR4-VR6		VRTB6HS103
	VR2, VR3		VRTB6HS223
	VR105		VRTS6HS102
	Other Resistors		RS1/10S□□□J
OTHERS			
	DL704	ACTYVE DELAY LINE	DTF1083
	DL705	ACTYVE DELAY LINE	DTF1084
	CN106, CN107	DIN CONNECTOR	52299-0200
	CN201	KR CONNECTOR	B4B-PH-K-S
	CN101	FLEXIBLE CONNECTOR 26P	DKP2991
		EARTH METAL FITTING	DNF1446
	CN111	KR CONNECTOR	S2B-PH-K-S
	CN105	KR CONNECTOR	S3B-PH-K-S
	CN202	KR CONNECTOR	S4B-PH-K-S
	CN122	KR CONNECTOR	S9B-PH-K-S

MAIN UNIT

SEMICONDUCTORS

Mark	No.	Part No.
⚠	IC601	CXA1372BQ
	IC1003	CXD1198AQ
	IC1008	DYW1536
	IC605	DYW1535
	IC1018, IC1019	HM514400CZ-8
	IC606	LH5116NA-10
	IC1017	M51953BL
	IC1002	MB86601
	IC1011	MC34268D
	IC1010	MCCS142235DW
	IC1007	MS62256CLL-10FC
	IC611, IC613-IC615, IC621	NJM4560M
	IC632, IC633, IC635, IC637, IC639	NJM4560M
	IC709	NJM4560M
	IC604	PDJ006A
	IC602	PDS004B
	IC1004	PDS005A
	IC1005	TC55328AJ-35
	IC638	TC74AC04F
	IC1009	TC74AC139F
	IC607, IC710	TC74AC573F
	IC608	TC74HC4051AF
	IC609, IC636, IC712	TC74HC4053AF
	IC1021	TC7S00F
	IC1015, IC1016	TC7S04F
	IC1014, IC1022	TC7S08F
	IC1013, IC1024, IC634	TC7S32F
	IC1020, IC1023	TC7SH32F
	IC1102	TC7W74F
	IC1006	TC7W74FU
	IC1001	UPD70325GJ-10-5BG
	IC603	UPD78355GC-7EA
	Q601, Q613	2SC2412K
	Q603, Q614, Q622	DTA124EU
	Q1001-Q1004, Q1101, Q1102, Q604	DTC124EU
	D604-D606, D803	1SS355
	D1009	ERA83-006
	D611	KV1420
	D1003	SLR-342MCT31
	D1004, D1006	SLR-342VCT31
	D1002, D1005	SLR-342YCT31

Mark	No.	Description	Part No.
COILS AND FILTERS			
	F1002	CHIP BEAD	DTF1069
	F1001	EMI FILTER	DTH1172
	L603	VARIABLE COIL(1 μH)	DTL1012
	L1000-L1003, L604, L605	EMI FILTER	RTF1163
SWITCH			
	S1001		DSX1040
CAPACITORS			
	C638, C639		CCSQCH100D50
	C1015, C1016		CCSQCH120J50
	C748, C761		CCSQCH271J50
	C739		CCSQCH470J50
	C637, C644		CCSQCH820J50
	C610		CEAL010M50
	C606		CEAL100M16
	C612		CEAL101M6R3
	C692		CEAL2R2M50
	C1025		CEAL470M16
	C1024, C608, C614, C627, C641		CEAL470M6R3
	C643, C645, C653, C654, C725		CEAL470M6R3
	C753		CEALNP2R2M35
	C628		CEALNP3R3M25
	C626		CEALNP4R7M16
	C1013		CEALR47M50
	C733		CEAS102M6R3
	C731, C732		CEAS471M6R3
	C1009, C715, C744		CKSQYB102K50
	C603, C611, C617, C622, C623		CKSQYB103K50
	C663		CKSQYB103K50
	C604, C605, C607, C609, C625		CKSQYB104K25
	C690, C742, C760		CKSQYB104K25
	C720		CKSQYB122K50
	C749		CKSQYB123K50
	C669		CKSQYB153K50
	C727		CKSQYB183K50
	C721		CKSQYB223K50
	C686		CKSQYB272K50
	C714, C716		CKSQYB273K50
	C601		CKSQYB332K50
	C602, C613, C719		CKSQYB333K25
	C615, C616		CKSQYB472K50
	C801		CKSQYB823K25
	C1000, C1001, C1003-C1007		CKSQYF103Z50
	C1010-C1012, C1014, C1017-C1019		CKSQYF103Z50
	C1021-C1023, C1032, C1102, C624		CKSQYF103Z50
	C630, C634-C636, C642, C659		CKSQYF103Z50
	C661, C717, C718, C722, C723		CKSQYF103Z50
	C740, C743, C745, C747		CKSQYF103Z50
	C750-C752, C798, C799		CKSQYF103Z50
	C817, C818, C841, C842		CKSQYF103Z50
	C1008, C1020, C631, C633, C640		CKSQYF104Z25
	C689, C726, C734-C736, C741		CKSQYF104Z25
	C621		CKSQYF473Z50
RESISTORS			
	VR601, VR602		VRTB6HS103
	Other Resistors		RS1/10S□□□J

Mark	No.	Description	Part No.
OTHERS			
	CN1004, CN609		52084-0410
		2mm PITCH BOTTOM CONNECTOR	
	CN701	2mm PITCH BOTTM CONNECTOR	52084-0510
	CN702	2mm PITCH BOTTOM CONNECTOR	52084-0610
	CN602, CN603	DIN CONNECTOR	53229-0200
	CN1007	KR CONNECTOR	B13B-PH-K-S
	CN1002	KR CONNECTOR	B4B-PH-K-S
		EARTH METAL FITTING	DNF1446
	X1002	CRYSTAL RESONATOR(24MHz)	DSS1055
	X602	CRYSTAL RESONATOR(45.158MHz)	DSS1060
	CN1001	CONNECTOR	FAP-5001-1202-OBS
		IC SOCKET	IC160-0324-230
		IC SOCKET	IC160-0444-230
	X1001	CERAMIC LOCK(20MHz)	OSS1020
	X601	CERAMIC LOCK(32MHz)	OSS1021
	CN706	KR CONNECTOR	S3B-PH-K-S
	CN1025	KR CONNECTOR	S5B-PH-K-S

WIFB UNIT

SWITCH

S601		DSX1046

RESISTORS

All Resistors		RD1/4PU□□□J

OTHERS

CN601	KR CONNECTOR	B4B-PH-K-S
CN607	KR CONNECTOR	B4B-PH-K-Y
CN606	KR CONNECTOR	B5B-PH-K-S
	PCB BINDER	DEF1015
	PC BOARD WIFB	DNP1767
CN603	KR CONNECTOR	S2B-PH-K-S
CN604	KR CONNECTOR	S3B-PH-K-S
	EARTH METAL FITTING	VNF-091

DRIVE UNIT

No Service Part.

TOC BOARD ASSY

RESISTORS

	RESISTOR	RD1/6PM681J

OTHERS

	PHOTO INTERRUPTER	GP1A51HR
	BINDER	Z09-056

FG BOARD ASSY

RESISTORS

	RESISTOR	RD1/6PM221J

OTHERS

	PHOTO REFLECTOR	NJL5801K-F1
	BINDER	Z09-056

7. TEST MODE

The DRM-1004X has various Test modes to check the internal switches, sensors and indication elements, to read internal data including SCSI-ID of the built-in drives, and to move particular mechanisms. Improper use of Test modes can cause damage to the mechanisms and/or personal injury.

7.1 Test Mode Table

Mode	Operation/Function	Function of the numeric keys	Function of the ENT key	Function of the ESC key
00	Indicates Version No.	Selects Test modes.	Transfers to other modes.	Terminates Test modes.
10	Checks indicators.	Invalid	Proceeds to Mode #11.	Returns to Mode #00.
11	Checks 7-segment LEDs.	Invalid	Proceeds to Mode #12.	Returns to Mode #00.
12	Checks for key input	Indicates the pressed key.	Proceeds to Mode #13.	Returns to Mode #00.
13	Checks for the magazine presence/absence.	Invalid	Proceeds to Mode #14.	Returns to Mode #00.
14	Reads the function switch settings.	Invalid	Proceeds to Mode #15.	Returns to Mode #00.
15	Reads the SCSI-ID switch settings.	Selects the drive with the 0 to 4 keys.	Proceeds to Mode #15.	Returns to Mode #00.
16	Checks the key and door switches.	Invalid	Proceeds to Mode #10.	Returns to Mode #00.
20	Refers to the error history.	+1 with the 7 key and -1 with the 9 key.	Almost the same as the 7 key.	Returns to Mode #00.
30	Manually operates the elevating mechanism.	Up with the 7 key and down with the 9 key.	Proceeds to Mode #31.	Returns to Mode #00.
31	Manually operates the loading mechanism.	CCW with the 7 key and CW with the 9 key.	Proceeds to Mode #32.	Returns to Mode #00.
32	Manually operates the clamper mechanism.	Selects one with the 1 to 4 keys, opens it with the 7 key and closes it with the 9 key.	Proceeds to Mode #33.	Returns to Mode #00.
33	Manually operates the mail slot.	Opens with the 7 key and closes with the 9 key.	Proceeds to Mode #30.	Returns to Mode #00.
40	Execute a carrier operation step by step.	Enters the address.	Moves in the forward direction.	Moves in the reverse direction.
50	Executes aging with the specified number of cycles (Mode A).	Invalid	Starts/restarts aging.	Stops aging and returns to Mode #00.
51	Executes aging with the specified time of duration (Mode B).	Invalid	Starts/restarts aging.	Stops aging and returns to Mode #00.
52	Executes aging with all discs mounted (Mode C).	Invalid	Starts/restarts aging.	Stops aging and returns to Mode #00.
53	Sets the time for Mode #51.	Inputs the time (max. 99 hours)	Fixes the input.	Cancels and returns to Mode #00.
54	Sets the number of cycles for Mode #51.	Inputs the number of cycles (max. 999)	Fixes the input.	Cancels and returns to Mode #00.
55	Sets the starting address.	Inputs the address number.	Fixes the input.	Cancels and returns to Mode #00.
60	Displays the total time of power apply.	To upper digits with the 7 key and lower digits with the 9 key.	Proceeds to Mode #61.	Returns to Mode #00.
61	Displays the total time of playback with Drive 1.	To upper digits with the 7 key and lower digits with the 9 key.	Proceeds to Mode #62.	Returns to Mode #00.
62	Displays the total time of playback with Drive 2.	To upper digits with the 7 key and lower digits with the 9 key.	Proceeds to Mode #63.	Returns to Mode #00.
63	Displays the total time of playback with Drive 3.	To upper digits with the 7 key and lower digits with the 9 key.	Proceeds to Mode #64.	Returns to Mode #00.
64	Displays the total time of playback with Drive 4.	To upper digits with the 7 key and lower digits with the 9 key.	Returns to Mode #60.	Returns to Mode #00.
65	Executes a demonstration of temperature-rise tests.	To upper digits with the 7 key and lower digits with the 9 key.	Starts/restarts the demonstration.	Stops demonstration and returns to Mode #00.

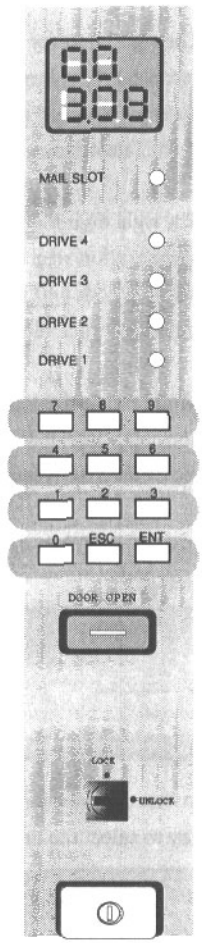
Mode	Operation/Function	Function of the numeric keys	Function of the ENT key	Function of the ESC key
70	Executes a demonstration of checking for disc presence/absence.	Inputs the start and end addresses.	Starts/restarts the demonstration.	Cancels, Stop and returns to Mode #00.
71	Executes a demonstration of the reader's external control tests.	Invalid	Starts/restarts the demonstration.	Invalid
72	Executes a demonstration of temperature-rise tests.	Invalid	Starts/restarts the demonstration.	Stops demonstration and returns to Mode #00.
73	Executes a demonstration of checking for disc presence/absence.	Inputs the start and end addresses.	Fixes the input. Starts/the demonstration.	Cancels, Stop and returns to Mode #00.
74	Executes a demonstration of mechanism operations for exhibition.	Invalid	Starts/restarts the demonstration.	Returns to Mode #00.
75	Executes a demonstration of the disc replacement time measurement.	Invalid	Starts/restarts the demonstration.	Returns to Mode #00.
76	Executes a demonstration of the writer's external control tests.	Invalid	Starts/restarts the demonstration.	Returns to Mode #00.
77	Executes a demonstration assuming actual usage conditions.	Invalid	Starts/restarts the demonstration.	Returns to Mode #00.
80	Clears all the disc presence/absence data.	Invalid	Execute clearing when pressed with the 0 key for 4 seconds.	Returns to Mode #00.
81	Clears all the entire error history.	Invalid	Execute clearing when pressed with the 0 key for 4 seconds.	Returns to Mode #00.
82	Clears all memory of the disc destination.	Invalid	Execute clearing when pressed with the 0 key for 4 seconds.	Returns to Mode #00.
83	Clears the total playback time of each drive.	Specifies the drive.	Execute clearing when pressed with the 0 key for 4 seconds.	Returns to Mode #00.
84	Clears all the EEPROM data.	Invalid	Execute clearing when pressed with the 0 key for 4 seconds.	Returns to Mode #00.

7.2 TO ENTER TEST MODES

To enter Test mode, the key switch must be first set in the UNLOCK position. Insert the supplied key into the key switch and turn it clockwise 90 degrees. When unlocked, the indicator of the door OPEN button will light.

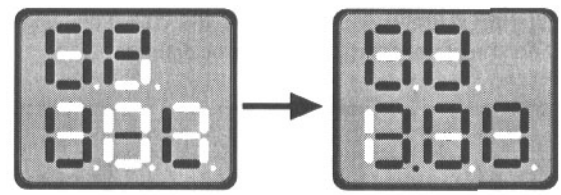
Then press the 0 key simultaneously with the ENT key for approximately 4 seconds until the mode indicator lights. The mode indicator shows the version number of the firmware. (The example in the figure to the right shows Version 3.08.)

Enter Test modes usually from normal operable mode (when initialization after power apply is completed and the mode indicator is not lit). If you do not wish to execute initialization or reapply the power, you can directly enter Test mode by any of the following methods.



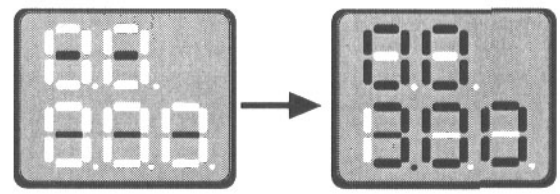
(1) To enter Test modes with the door open

While the mode indicator is showing the door open status, you can enter Test modes by first setting and then pressing the 0 key simultaneously with the ENT key for approximately 4 seconds.



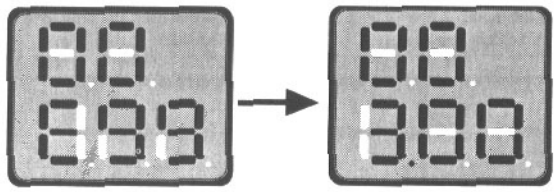
(2) To enter Test modes upon power-on without executing initialization

Set the key switch to the unlocked position and turn on the power while pressing the 0 key simultaneously with the ENT key. Even if the mode indicator shows the same indication as that for initialization, hold the 0 key and ENT key down, and the unit will enter Test mode after 4 seconds without executing the mechanism initialization.



(3) To enter Test modes when an error status is indicated

Set the key switch to the unlocked position and press the 0 key simultaneously with the ENT key for approximately 4 seconds, and the unit will enter Test modes.



Note, however, that mechanism operations in Test modes may be limited when you enter Test modes by one of these alternate methods. For details, see the descriptions of the respective modes.

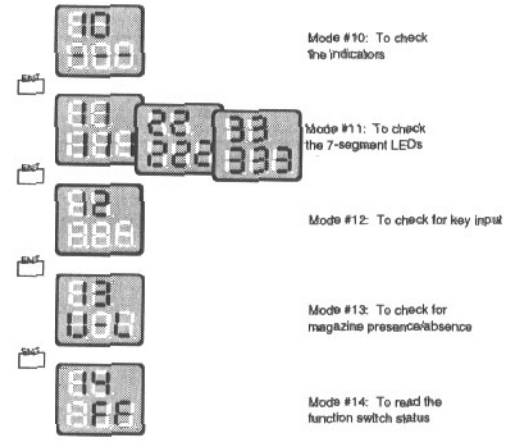
7.3 TO CHARGE AMONG TEST MODES

Each test mode is designated by a 2-digit number where the left digit is one of 0 to 8, for major 9 modes in total. The right digit has different meanings depending on the major mode. You can enter any of the modes listed in Table in Paragraph 7.1 in the same manner except Mode 8. (The exception for Mode 8 is to prevent misoperation.)

Mode 0 (Version No. indication mode) functions as a pathway to other Test modes. Enter the number of the destination Test mode with the numeric keys. Check the entered number on the mode indicator, then press the ENT key. The unit jumps to the specified mode. Entering 0 for the right digit can be omitted.

The example above shows the procedure for changing from Mode 0 to Mode 1 (Status indication mode), or to be precise, Mode #10, the first submode of Mode 1, which consists of 7 submodes 0 to 6.

In Mode 1, Mode 3 and Mode 6, you can increment the submode number by pressing the ENT key. In Mode 1, Mode 3 and Mode 6, you can increment the submodes by pressing the ENT key.


Mode #10: To check the indicators
Mode #11: To check the 7-segment LEDs
Mode #12: To check for key input
Mode #13: To check for magazine presence/absence
Mode #14: To read the function switch status

In other modes, the ENT key is used for purposes other than incrementing the submode. Press the ESC key to return to Mode 0 and directly specify the desired mode.

The submodes of Mode 1, Mode 3 and Mode 6 can also be directly specified.

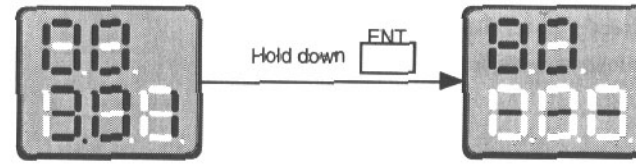
As the submodes of Mode 5 and Mode 7 are quite independent from one another, incrementing the submode within Mode 5 and Mode 7 is not allowed. Press the ESC key to return to Mode 0 and directly specify the desired mode.

The right digit for Mode 2 (Error-history reference mode) does not represent the submode but the order of event occurrence in the error history. You can only begin Mode 2 with #20, which corresponds to the latest error. Use the ENT key to trace back the history.

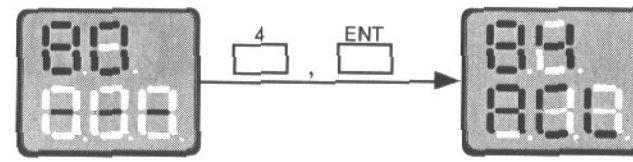
The right digit for Mode 4 (Manual step operation mode) represents an operation step of the carrier mechanism. You can only begin Mode 4 with #40 as the step to specify the address. Use the ENT key to advance the steps.

Mode 8 is provided for clearing the built-in EEPROM and is not normally operated by users. To differentiate this important mode, the method for entering this mode differs from those of other modes.

Operation: In Mode 0, press the ENT key until the mode indicator changes.

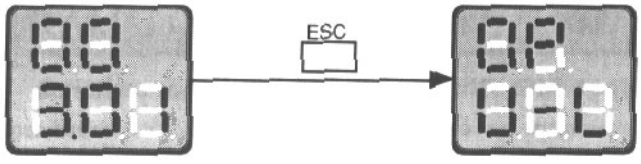


In this condition, enter the submode number, then press the ENT key to select the desired clear mode.

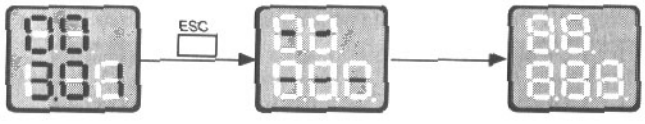


7.4 TO TERMINATE TEST MODES

From any Test mode other than Mode #71, pressing the ESC key (several times in some cases) resumes Mode 0 (Version No. indication mode). It takes a certain time if the ESC key is pressed while a mechanism is moving in Mode 5 or Mode 7. When you press the ESC key in Mode 0, Test modes are terminated. If the door is open when Test modes are terminated, the following indication appears.



If the door is closed, the changer performs mechanism initialization and enters normal operating mode.



7.5 MODE 0: VERSION NO. INDICATION MODE

Mode 0 functions as a pathway to Test modes and a gate to enter/exit to/from other modes. The lower row of the mode indicator shows the version number of the firmware which controls the DRM-1004X-series changer unit.

The indication shown to the left means Version 3.08. This is the same as the Product Revision Level, which is read by the INQUIRY command of SCSI. When you have updated the firmware, be sure to check the version number using this mode.

7.6 MODE 1: STATUS INDICATION MODE

Mode 1 is used to check the indication devices on the control panel, the functions and SCSI-ID switch settings on the rear panel, and whether the magazines and drives have been properly installed. Mode 1 consists of seven submodes, 0 to 6, which can be sequentially selected with the ENT key, as mentioned in paragraph 7.3.

Mode #10: Checking the indicators

Seven indicators on the control panel light in sequence at one-second intervals.

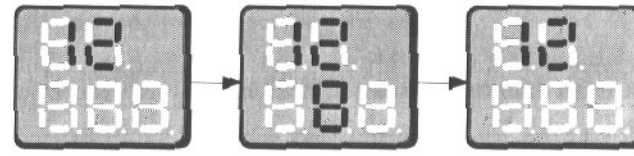
Confirm that all the indicators light one by one and that multiple indicators do not light simultaneously.

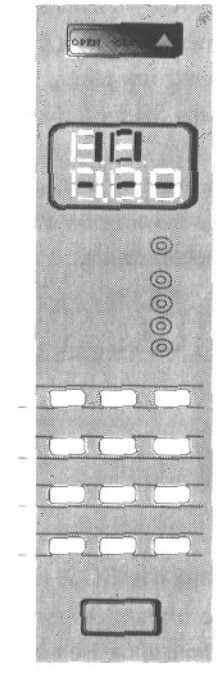
Mode #11: Checking the 7-segment LEDs

The mode indicator changes at one-second intervals. Confirm that all five digits always show the same figure or letter. While a total of 32 kinds of figures or letters are displayed in turn, the checking procedure will be sufficient when you confirm from 11111 to 99999 in multiples of 11111.

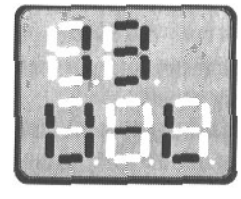
Mode #12: Checking for key input

Confirm that the number of the key being pressed is displayed in the center of the lower row of the mode indicator. The number goes off when you release the key. Be careful not to press the ESC and ENT keys in this mode, as they will change the modes. When you press the door OPEN button or the mail-slot OPEN/CLOSE button, the indicator of the button remains lit while you hold it pressed.





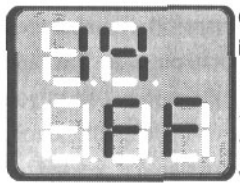
Mode #13: Checking for magazine presence/absence



The set status of the magazines is displayed on the lower row of the mode indicator. "U" refers to the upper magazine, "L" to the lower magazine, and "–" (in-between) to the judgment of the disc out-of-position sensor, which will light if in proper condition. "U" and "L" blink if the corresponding magazines have not been installed, and "–" blinks if any disc is protruding from either magazine.

If "U" or "L" blinks even when the corresponding magazine has been properly set, the detection switch may be defective. If "–" blinks even when no disc is protruding, the light-receiving block of the out-of-position sensor may be defective. Check it again with the door open, as the indication specifications are completely the same in Mode #13 for door open status and door closed status.

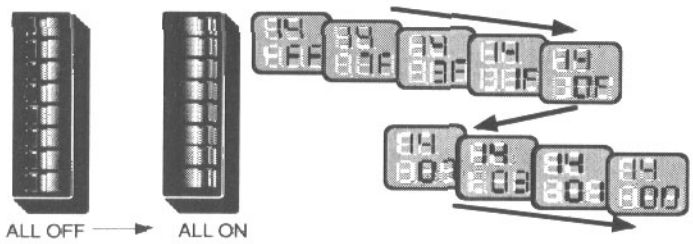
Mode #14: Reading the function switch status



The setting status of the function switches is displayed on the lower row of the mode indicator. As 1 is OFF and 0 is ON, the indication must be "FF" after the function switches are set to OFF at the factory. While you cannot access to the function switches when the door is closed, you can obtain a real-time indication of the switch status in this mode.

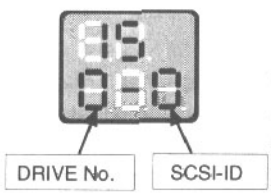
In modes other than Test modes, the function-switch status is not always read. The status value is read and used when the power is applied, the SCSI bus is reset, or initializing is performed after the door is closed. If this value is different from that read in Mode #14, the indication in the lower row blinks. If it blinks even when no switch position has been changed, there may be a defect in the switches.

Function switch 1 corresponds to bit 0, and switch 8 to bit 7. Thus, the indication changes as shown below when you change the settings in sequence from the bottom switch.



Mode #15: Reading the SCSI-ID switch status

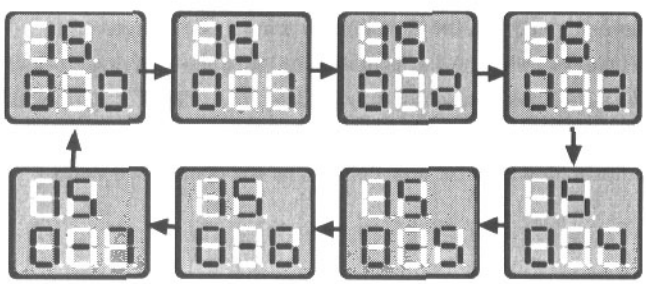
The DRM-1004X-series changer can read not only the SCSI-ID of the changer itself but those of the built-in drives.



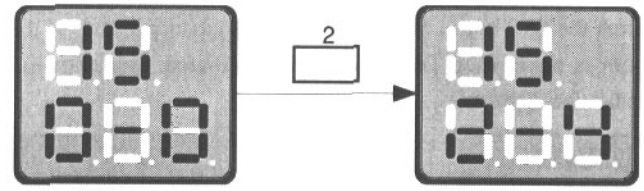
ID numbers "1" to "4" are for the drives and "0" is for the changer itself.

The SCSI-ID must be from 0 to 7, and there must be no duplicate ID numbers on the same SCSI bus. You can change the SCSI-ID using the rotary switch located on the rear panel.

The least significant (right) digit in the lower row, which shows the ID, lights only if it matches the setting at the initialization. It blinks if you have changed the setting.



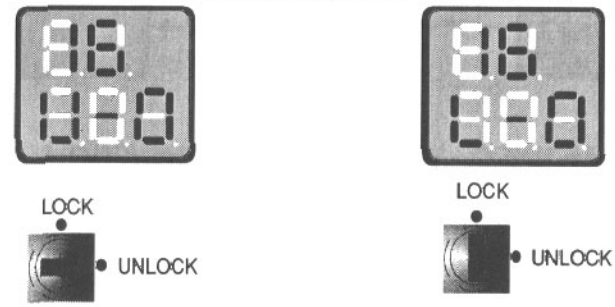
To check the SCSI-ID of a drive, enter the drive number. If the specified drive has not been installed or if the changer does not recognize the drive, both the drive number and SCSI-ID indications blink. Blinking of the SCSI-ID alone means that it differs from the setting at initialization.



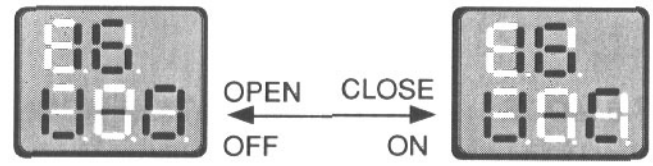
Mode #16: Checking the key and door switches

In this mode, you can check the statuses of the key switch and door switch. The mode indicator shows the locked/unlocked status of the key switch with the left digit of the lower row and the open/closed status of the front door with the right digit.

To operate the key switch, an appropriate key is required.



The door switch is turned on when the front door is closed. For the DRM-1004X-series changers, any mechanism operations with the door switch off are electrically prohibited for safety reasons. Operation in Test modes is no exception. Be sure to turn the door switch on before entering Test mode, 3, 4, 5 or 7.



If the door is opened in normal operating mode, mechanism initialization will be performed when the door is then closed.

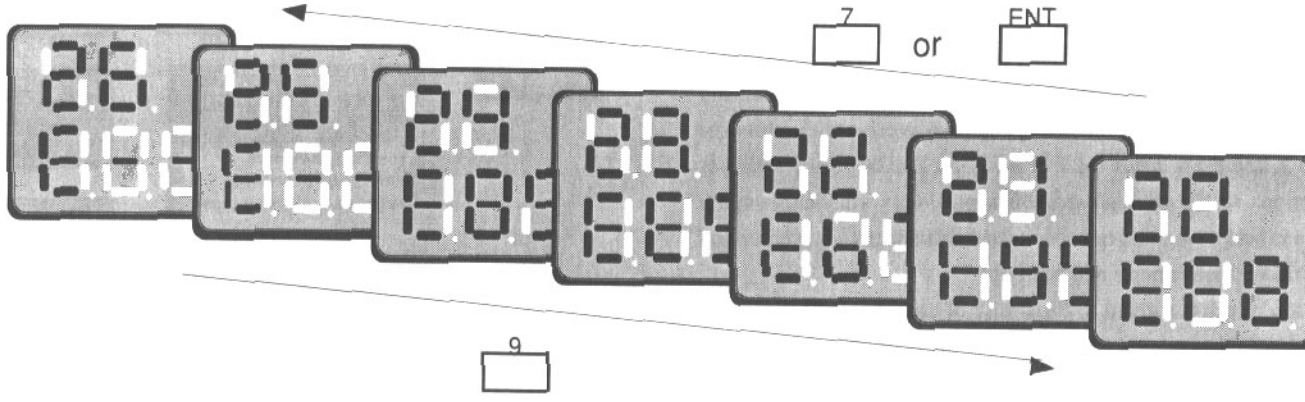
In Test modes, however, initialization is not performed even if you open/close the door. It will be performed when the changer returns to normal operating mode from Test modes.

When the ENT key is pressed in Mode #16, the changer returns to Mode #10. Pressing the ESC key in any mode resumes Mode #00 for Version No. indication.

7.7 MODE 2: ERROR HISTORY REFERENCE MODE

Mode 2 enables you to refer to error history, in which 16 events from 0 to F are recorded. You can refer to them in sequence from the latest to the oldest by pressing the ENT key. Each time a new error occurs, they shift by one. Once the number of events stored in memory reaches 16, the oldest one will be erased at the time a new one is recorded. To prevent a specific error from occupying the limited memory area, any event of the same error code as the previous one will not be recorded.

An error code is of two digits following an "E," which indicates, that those digits refer to an error code. "E - -" appears if no more errors have been recorded. The ENT key functions regardless of whether an error has been recorded or not. When you press the ENT key at #2F, the unit returns to #20. You can also increment the event number by pressing the 7 key or decrement it by pressing the 9 key



For the meaning of error codes, see the table below. You will find the same table inside the front panel.

エラー番号	Estimated Cause	推定される原因
83	Disc mounted uncorrectly	マガジンからのディスク飛び出し
86	No response form elevation motor FG	ロータリーエンコーダ不良
87	No response from elevation sensor	昇降アドレスセンサー不良
88	Driver of elevation motor locked	昇降モーター異常負荷
89	Time over of Elevation movement	昇降動作タイムオーバー
97	Loading Mechanism switches are connected correctly	ローディングスイッチが正しく読めない(フレキ外れ等)
98	Loading Mechanism moved uncorrect position	ローディングメカの不当なポジションへの移動
99	Time over of Loading movement	ローディング動作タイムオーバー
9A	Disc transporter can't sense a disc	搬送部ディスクセンサー不良
A6	Drive #1 is not connected correctly	ドライブ#1接続不良
A7	Time over of spinning up Drive #1	ドライブ#1立ち上がらない
A8	Time over of spinning down Drive #1	ドライブ#1停止しない
A9	Time over of Drive #1 clamper movement	ドライブ#1クランパ動作タイムオーバー
B6	Drive #1 is not connected correctly	ドライブ#2接続不良
B7	Time over of spinning up Drive #2	ドライブ#2立ち上がらない
B8	Time over of spinning down Drive #2	ドライブ#2停止しない
B9	Time over of Drive #2 clamper movement	ドライブ#2クランパ動作タイムオーバー
C6	Drive #3 is not connected correctly	ドライブ#3接続不良
C7	Time over of spinning up Drive #3	ドライブ#3立ち上がらない
C8	Time over of spinning down Drive #3	ドライブ#3停止しない
C9	Time over of Drive #3 clamper movement	ドライブ#3クランパ動作タイムオーバー
D6	Drive #4 is not connected correctly	ドライブ#4接続不良
D7	Time over of spinning up Drive #4	ドライブ#4立ち上がらない
D8	Time over of spinning down Drive #4	ドライブ#4停止しない
D9	Time over of Drive #4 clamper movement	ドライブ#4クランパ動作タイムオーバー
E9	Time over of Mail-Slot movement	メイルスロット動作タイムオーバー
F1	Data in the EEPROM is invalid	EEPROMバックアップデータ異常
F2	Magazine mounted uncorrectly	マガジンロックスイッチ不良
F3	Front door could not open	ドアスイッチかプランジャーの不良
F8	Disc transproter can't catch a disc	搬送部メカニズム不良(エージングモード)
F9	Mail-Slot can't sense a disc(export)	メイルスロットディスクセンサー不良(出すとき)
FA	Disc slipped in the Mail-Slot(import)	メイルスロットディスクセンサー不良(いれるとき)

7.8 MODE 3: SUPER MANUAL OPERATION (to independently drive the carrier mechanisms)

The carrier mechanism of the DRM-1004X-series changers is driven by two motors, one for elevating and the other for loading. While the motors to drive the clamping mechanism for discs in drives are located in the drives, the drive circuit is in the changer unit. Driving of the open/close mechanism is performed in the same manner as for the clamping mechanism.

In Mode 3, you can control these motors individually to analyze a problem, focusing on a malfunctioning block, or forcibly initializing a mechanism. Specify the motor you wish to drive with submodes 0 to 3, and press either the 7 or 9 key for the desired direction of rotation. As the driving voltage is applied only while either of the keys is held down, you can operate the mechanisms while observing their actual movements and positions.

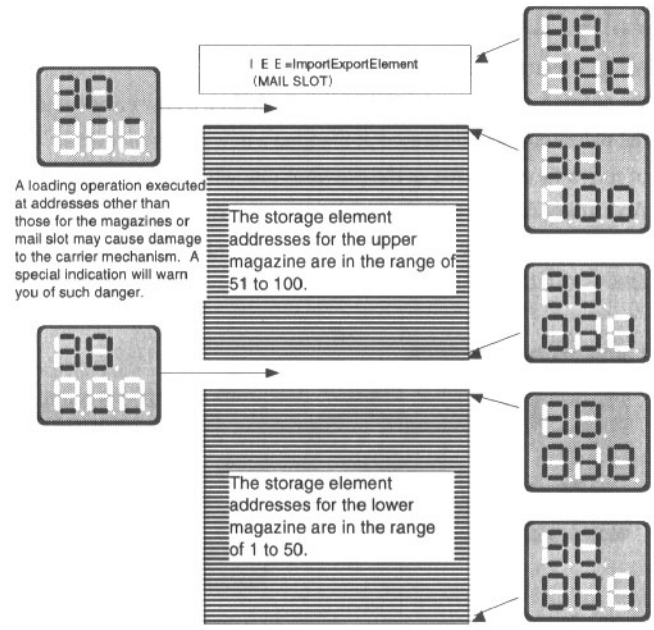
As top priority is given to flexibility of operations, be careful to eliminate misoperation which will cause damage to the mechanisms and/or personal injury.

Operations in this mode will neither automatically stop nor be reversed in response to a timeout, etc., as they are in normal operating mode.

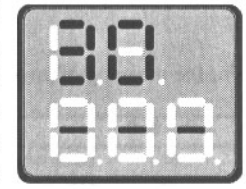
Mode #30: Manual elevating operation mode

Press the 7 key to move the elevating mechanism upward and the 9 key to move it downward. It moves at the minimum speed for the first one second, then accelerates. The rate of acceleration in this mode is 1/8 and the maximum speed is 1/3 that in a normal elevating operation. When you release the key, the elevator decelerates and accurately stops at the nearest address when it reaches the minimum speed.

In the lower row of the mode indicator, the real-time elevating address is displayed. The position at the mail slot is the uppermost address and the position of the lowest slot of the lower magazine is the lowermost address. The elevating mechanism will not exceed these limits. When the elevating mechanism comes close to either of these limits, it decelerates and stops, even if you hold the key down.


I E E =ImportExportElement
(MAIL SLOT)
A loading operation executed at addresses other than those for the magazines or mail slot may cause damage to the carrier mechanism. A special indication will warn you of such danger.
The storage element addresses for the upper magazine are in the range of 51 to 100.
The storage element addresses for the lower magazine are in the range of 1 to 50.

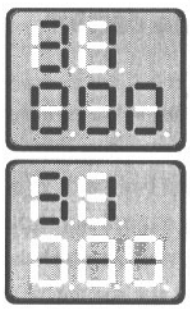
As elevating operations are thus performed while reading addresses, the indication shown in the figure to the right appears and the operations cannot be executed even manually before initialization of the elevating mechanism is completed. If an error occurs, the address is displayed for reference, but no operation is possible.



A timeout in elevating operations has no effect in this mode, but checking for a protruding disc will be performed. If a protruding disc is detected while you are holding the 7 or 9 key down, it immediately leads to an error. (For a normal elevating operation, checking is performed immediately before starting the operation. If checking ends in OK, checking will not be repeated until operation is completed.)

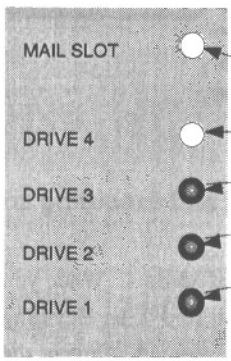
By entering this mode with Function switch 5 set to ON, an elevating operation maintaining the minimum speed is possible. As the DRM-1004X constantly controls the positions of the mechanisms while reading the addresses, a defect may be caused if an operation is executed without first adjusting the sensors in the elevating system. If the sensors have not been adjusted, it is recommended to have Switch 5 set to ON.

Mode #31: Manual loading operation mode



When you press the ENT key in mode #30, the changer enters Mode #31. (Mode #31 can also be selected directly from Mode #00 by pressing the 3, 1 and ENT keys in sequence.) In Mode #31, you can drive the disc loading mechanism and monitor the loading-mechanism switches in real time.

In this mode, the lower row of the mode indicator shows either "000" or "- - -." The indication "000" means that the loading mechanism is located at a position ready for elevating. The indication must be "000" after an elevating operation in Mode #30. On the contrary, it would be "- - -" if the changer have directly entered this mode after an error had occurred in the loading system.



The position of the loading mechanism is detected using five switches and used for control. In Mode #31, the logic levels of these switches (at flexible cables) are output in real time to a line of five disc indicators on the control panel. The indicators light when SWn = High.

The mechanism rotates counterclockwise while you hold the 7 key down, and clockwise while you hold the 9 key down. These directions of rotation correspond to those when viewing the carrier mechanism from above.

Operations of the loading mechanism in this mode are not limited by whether it is holding a disc or not, the elevation stopping position is normal or not, the magazines have been set or not, or drives have been installed or not. Therefore, it is recommended to operate the loading mechanism with the top panel removed so that you can see the actual condition of the mechanism. Improper operations will damage the loading mechanism.

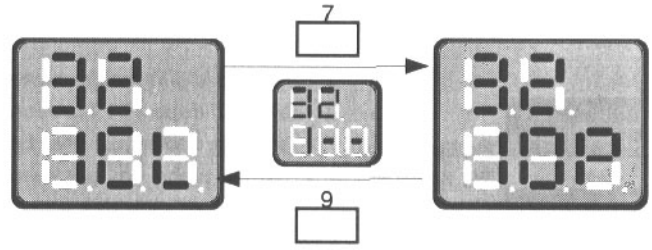
OP (open) is the completely released status.

Mode #32: Manual Clamper Operation mode

The clamper motors of the built-in drives are controlled by the hardware of the changer unit. In Mode #32, you can open/close the clamper of any desired drive by specifying the drive number.

When you enter Mode #32, the mode indicator shows the clamper status of the lowest-numbered drive of the built-in drives. Press a key from 1 to 4 in this condition to specify the drive number to display the clamper status of the desired drive. If the specified drive has not been installed, the key input is ignored. When you press the ENT key, the changer shifts to Mode #33.

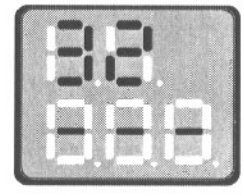
The indication "OP" means Open, and "CL" means Closed, directly representing the limit switch output of the clamper mechanism. The indication "- -" represents neutral status, where neither of the limit switches is turned on.



The mechanism moves in the direction to release while you hold the 7 key down, and it moves in the direction to clamp while you hold the 9 key down. CL (close) is the completely clamped status and OP (open) is the completely released status.

Although the changer pauses the motor when it detects that a limit switch is turned on, it immediately restarts driving the motor when the switch is turned off if you continue holding the key down.

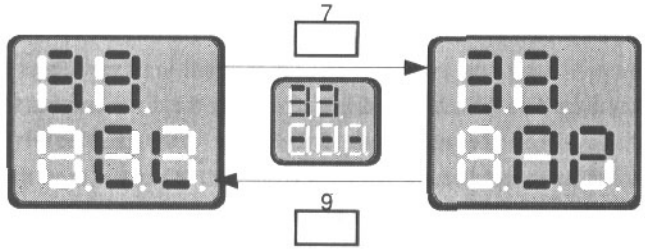
If no drive has been installed, the lower row of the mode indicator shows "- - -" when the changer enters Mode #32. If "- - -" is displayed even when drives have been installed, check the connections to the drives.



Mode #33: Manual mail-slot operation

The mail slot can be operated in the same manner as the clamper mechanism in Mode #33. When the changer enters Mode #33, the status of the mail slot is indicated on the mode indicator.

You can operate the slot in the direction to open by holding the 7 key down, and in the direction to close by holding the 9 key down.



CL (closed) is the completely closed status, and OP (open) is the If the disc presence/absence sensor does not function properly, another disc may be carried to the mail slot even when it already has a disc inside.

ON: Disc detected
OFF: No disc detected or mail slot open

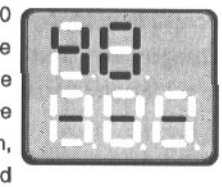
If the disc presence/absence sensor does not function properly, another disc may be carried to the mail slot even when it already has a disc inside.

Press the ENT key in Mode #33 to resume Mode #30.

7.9 MODE 4: MANUAL STEP OPERATION MODE (step execution of the carrier mechanism)

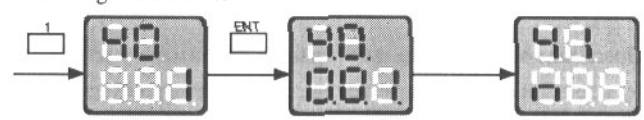
Manual Step Operation mode enables you to execute a disc-carrying operation step by step in the predetermined sequence. Any desired disc in the magazines can be carried to the desired built-in drive or mail slot. Note that the disc always returns to the original slot in the subsequent disc-return operation. In this mode, you can check the carrier mechanism operation, built-in drives, mail slot and the basic component elements of the DRM-1004X.

Press the 4 key then the ENT key in Mode #00 to enter Mode #40, which is the only one mode referred as Mode 4. Mode #41, #42, etc. are not available. The indication "41" on the mode indicator means step 1 of Mode 4. In addition, most such step indications are accompanied by "n" in the disc-set sequence or "r" in the disc-return sequence, which is displayed as the left digit of the lower row.



Step 0: Entering the disc address and executing an elevating operation

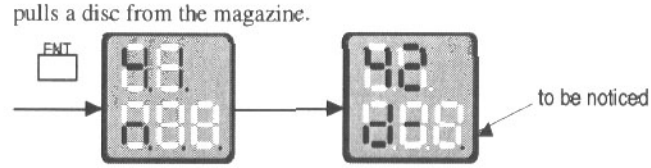
Mode #40 can also be regarded as step 0 of Mode 4. When you enter the address of the disc to be used in step 0, an elevating operation up to the specified address is executed. During the elevating operation, all the dots of the mode indicator blink. When the address is reached, the mode automatically shifts to step 1.
When you press the 1 key then the ENT key, the mode indicator will change as follows.



The legal disc addresses are 1 to 101. If an illegal address is specified, no operation starts, and the indication returns to "- - -" when you press the last key.
You can specify an address where no disc is set and execute a series of operations. In step 0, you can enter even an address of a magazine which is not installed, to execute an elevating operation only. It will be rejected when you press the ENT key in step 1n.
* : 101 is used when adjusting the sensitivity of the carrier disc sensor in the mail slot.

Step 1n: Pulling out a disc or checking for the presence of a disc

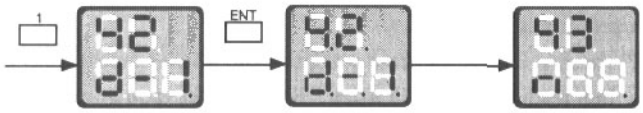
When you press the ENT key, the carrier mechanism operates and pulls a disc from the magazine.



During the operation, all the dots of the mode indicator blinks. When the operation is completed, the mode automatically shifts to step 2. The dot at the lower right corner functions in response to the output from the disc presence/absence sensor on the carrier block and lights when a disc is detected. The indication "d" at the lower left means "drive."

Step 2n: Specifying the drive to execute an elevating operation

When you press the 1 key *then ENT, the* mode indicator will change as follows.



In this step, specify the drive to which a disc is to be set. The carrier block facing the magazine rotates 180 degrees to face the drive side, then performs an elevating operation to the position of the specified drive. When the elevating operation is completed, the mode shifts to step 3.

In manual step operation, a "tornado operation" to simultaneously execute 180-degree rotation and elevation is not performed.

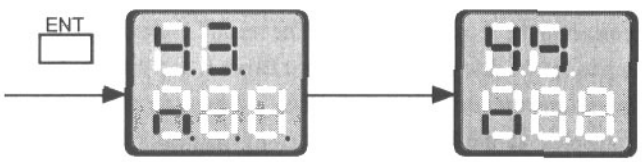
As the DRM-1004XR is not equipped with drive 1, it will not accept input of the 1 key. Similarly, the 3 and 4 keys are not accepted by the 1004X-2. If key input is not accepted *even if a drive* of the corresponding number is mounted, it may be for either of the following reasons.

1. The clamper of that drive is open.
2. A disc is set in that drive.

These conditions do not occur in normal operating modes, but may occur in a trouble analysis operation after an error was generated. The easiest way to eliminate these conditions is a Power-On reset. If you do not wish to turn off power, use other test modes to eliminate the conditions. For details, see Section 6.

Step 3n: Loading to a drive

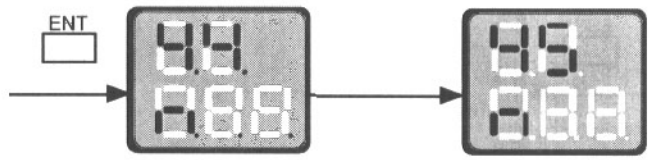
When you press the ENT key, a loading operation to set a disc into a drive is executed.



As the disc moves from the carrier block to a drive, the dot at the lower right corner of the mode indicator goes off.

Step 4n: Clamping a disc

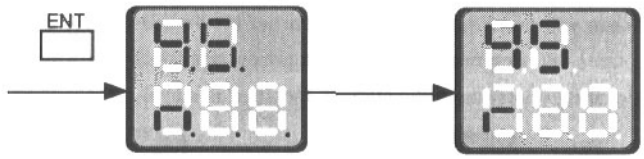
When you press the ENT key, a disc in a drive is clamped.



If there is not actually a disc *on the drive*, do not proceed to the subsequent steps. If you attempt to start up the drive without a disc, an error will be generated.

Step 5n: Starting up the drive

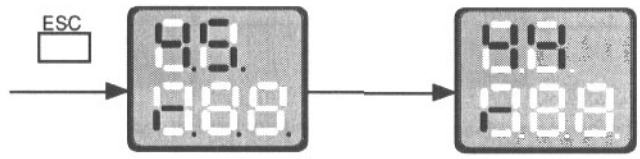
Press the ENT key to start up the disc in the drive.



During the start-up operation, all the dots of the mode indicator blink. When the operation is completed correctly, the indication at the lower left changes from "n" to "r." This means that the disc-set sequence is completed and the disc-return sequence is now starting. Use the ESC key to proceed the steps to return the *disc to the original* position.

Step 5r: Stopping the drive

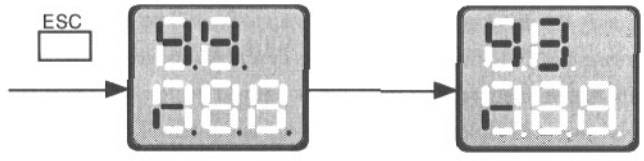
Press the ESC key to stop the disc in the drive.



During the stopping operation, all the dots blink.

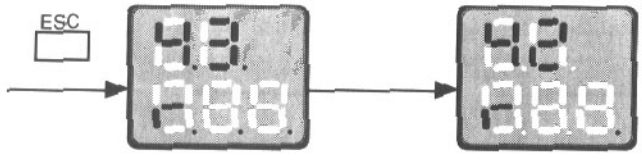
Step 4r: Unclamping the disc

Press the ESC key to open the clamper.



Step 3r: Unloading the disc from the drive

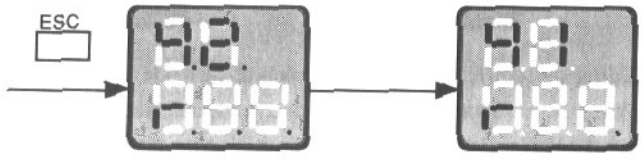
Press the ESC key to pull the disc from the drive to the carrier block.



As a disc moves to the carrier from a drive, the dot at the lower right corner of the mode indicator lights, responding to the output from the disc sensor on the carrier block

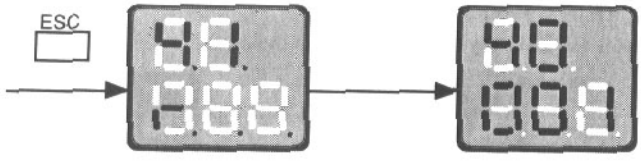
Step 2r: Rotating the magazine 180 degrees and executing an elevating operation

When you press the ESC key, the carrier block facing to the drive rotates 180 degrees to face the magazine side, then performs an elevating operation to the address specified in step 0.



Step 1r: Returning the disc to the magazine

Press the ESC key to return the disc to the magazine.



The lower row of the mode indicator shows the disc address specified at the beginning. Once you press the ESC key again in this condition, the indicator resumes the initial display, whereupon you can specify another address.

The above description shows an example of carrying a disc to a drive. It is also possible to carry a disc to the mail slot by defining the mail slot as drive 5. Press the 5 key then ENT in step 2n to specify the drive number. The steps up to 3n will be proceeded by pressing ENT in the same manner as described above. As the mail slot has no clamper, the mail slot is opened in step 4n. Once the mail slot is completely open, the mode automatically shifts to the disc-return sequence.

Compared with Super Manual mode, previously mentioned, this Step Manual mode achieves operations in a way much more similar to normal operating mode. The mechanism settings for time-out are the same as in normal operating mode. Note, however, that operational flexibility in this mode is widened as much as possible. Sufficient care must be taken when executing operations in this mode.

7.10 MODE 5: AGING MODES

There are three Aging modes A, B, and C included in the test modes. Aging mode B is intended for use at manufacturing lines, and the changer enters this mode only when power is turned on with Function switch 8 set to ON. In this mode, aging for approximately 3 hours is executed and automatically terminated (see paragraph 7.7). Aging of each individual drive is to be performed before it is mounted into the changer unit. Aging of the changer unit is only for checking operations in the mounted status (open/close operations of the clamper mechanism and startup of the spindle). As the startup (spinning-up) operation need not be performed every cycle, it is appropriately curtailed.

There is no limit to the drive configuration, which can include two or four readers and even a writer. However, the ratio of elevating operation to loading operation in one cycle varies as the operation sequence is adjusted depending on the number of drives mounted.

Specifications common to Mode #50 (Mode A) and Mode #51 (Mode B)

Mode #50 and Mode #51 have many common points. Both modes use 4 discs.

The basic operation sequence of Mode A and Mode B is as follows:

Sets the disc at address 98 (the third disc from the top) into Drive 1.
Sets the disc at address 100 (the disc on the top) to Drive 2.
Sets the disc at address 97 (the fourth disc from the top) into Drive 3.
Sets the disc at address 99 (the second disc from the top) into Drive 4.

Returns the disc in Drive 1 to address 96.
Returns the disc in Drive 2 to address 98.
Returns the disc in Drive 3 to address 95.
Returns the disc in Drive 4 to address 96.

This is the first single cycle of aging operations with four drives mounted. When the first cycle is completed, each disc must have been set to the second lower slot. The second cycle begins with a step to set the disc at address 96 into Drive 1, and the subsequent operations are similarly performed. When the 50th cycle is completed, all the discs return to the original positions, addresses 100 to 97 (this means one round of aging is completed).

As long as you do not change the default starting address (100) using Mode #55, first set four discs to addresses 100 to 97 (the top four disc slots of the upper magazine). If aging is started without setting the discs, error F8 will be generated. If there is another disc in any of the drives, mail slot or other disc slots, error 99 may be

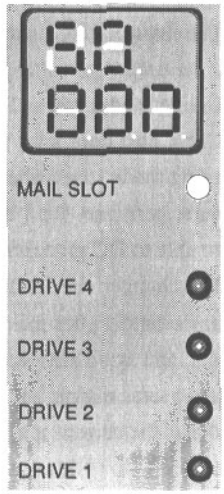
generated, which may cause damage to the carrier mechanism or the disc. Before starting aging, be sure to check that there is no disc other than the required four discs.

When the number of mounted drives is less than four, some of the discs will have no destination drives and will be directly carried to the respective second lower disc slots. If the discs were to move only from one slot to another, the ratio of swing operations in one cycle would be extremely low. To prevent the number of swing operations in one cycle from widely changing depending on the number of drives, the aging sequences are designed so that elevate/swing operations are performed to the positions for unmounted drives.

The mechanism operations in one cycle are as follows:

Number of operations in one cycle	Number of mounted drives				
	4	3	2	1	0
Elevating operation	16	15	14	13	12
Loading operation	8	7	6	5	4
Unloading operation	8	7	6	5	4
Swing operation	14	13	12	10	0
Clamp operation	14	3	2	1	0
Release operation	4	3	2	1	0

Mode #50 (Mode A): Sequence of aging with the specified number of cycles



Aging in Mode #50 performs operations for the specified number of cycles, then stops. As the time required for operations in one cycle is fixed, aging will stop after a specific interval. Default for the number of cycles is 550, which can be changed in Mode #54. It takes about 2 hours to complete 50 cycles, thus about 22 hours for 550 cycles.

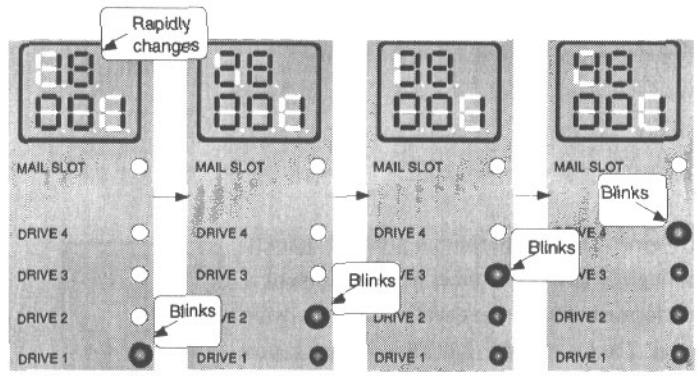
Press the 5 key and subsequently ENT in Mode #00 to enter Mode #50. The lower row of the mode indicator initially shows "000" then the number of cycles for the operation being executed. The drive indicators for the mounted drives light to indicate the numbers and positions of the mounted drives.

When the ENT key is pressed in this condition, aging begins. During aging, the mode indicator shows the steps of aging in the upper row and the number of cycles in the lower row.

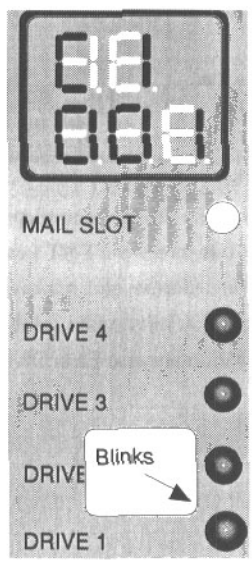
A drive indicator starts blinking when the corresponding drive is specified as the source or destination. It steadily lights when a disc is carried to the drive.

In Mode #50, the changer actually starts up the drive in cycles 1, 11, 21, 31, and so on. In other cycles, the disc is only placed in the drive. In cycles 10, 20, 30, and so on, the changer carries the disc to the mail slot and closes it after completing the disc-return procedure in these cycles.

Although you can monitor the operation sequence with the upper row of the mode indicator, the indication changes so rapidly during mechanism movements that only the left digit may be readable. The right digit is useful for analyzing the cause of an error stop (see Section 7.14). The left digit is related to the drive indicator status. While a disc is being carried to Drive 1, the left digit shows "1," and the DRIVE 1 indicator blinks.



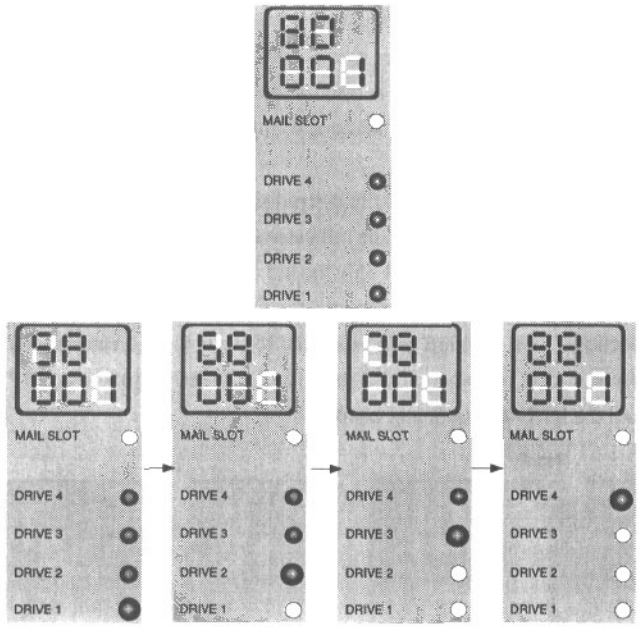
The changer starts up all the drives when the procedure to set the discs to the drives is completed (as this is the first cycle). When the changer receives signals from all the drives which inform that the startup is correctly completed, it halts mechanical operations for a certain time. In this condition, the upper row of the mode indicator shows "C1" and only the DRIVE 1 indicator blinks and the other drive indicators remains lit.



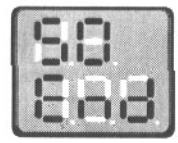
The figure to the left shows the indications when discs are available in the drives. The mode indicator remains unchanged for more than 1 minute, but the DRIVE 1 indicator continues blinking.

After about 1 minute 40 seconds, the changer forcibly stops and then starts the disc-return sequence. The figures below show the indications during the disc-return sequence.

When the disc-return sequence is completed, the operation cycle number is incremented by 1, and the next cycle begins.



However, if the operations proceed quickly enough to have extra time, time adjustment is performed to keep the duration of once cycle even. The figure to the right shows the indication during the time adjustment.



When operation of the specified number of cycles is completed, aging automatically stops and the mode indicator displays "End." The upper row shows again the number of the mode "50".

If an error is generated, the operation is interrupted, and the indicator displays the current cycle and sequence numbers. The indicator then alternates between displaying this information and the error code.

When you press the ESC key during aging, the changer completes the current cycle and then stops. To restart, press the ENT key. Note that the set values including the starting address, etc., return to the defaults if Test modes are terminated. You must again set the discs or set the starting address in Mode #55, otherwise Error F8 is generated.

Mode #51 (Mode B): Sequence of aging with the specified time of duration.

In Mode #51, the changer actually starts up the drives in cycles 10, 20, 30, and so on. In other cycles, the disc is just carried to the drive and immediately returned. In cycles 1, 11, 21, 31, and so on, the changer carries the disc to the mail slot and closes it after completing the disc-return procedure in these cycles.

In the same manner as Mode #50, the upper row of the mode indicator shows the current step and the lower row shows the current cycle. The most significant difference from Mode #50 is that no time adjustment is performed. The changer unintermittently continues operations until the specified time elapses. This means the number of cycles of operations achieved in 3 hours (default setting) in this mode corresponds to that of 12 hours in Mode #50.

Mode #52 (Mode C): Sequence of aging with all discs mounted

Aging in Mode #52 is performed by setting 100 discs. Discs are carried to the drives and mail slot and returned to the original slots. Aging counts one cycle each time 5 discs are returned. The next cycle begins with the next lower address. This means that there is no particular disc assignment to drives and the mail slot. (In Modes #50 and #51, each disc is assigned to a particular drive or the mail slot.)

The changer starts up drives each time a disc is set. When the startup is succeeded, the changer waits until the drive stops.

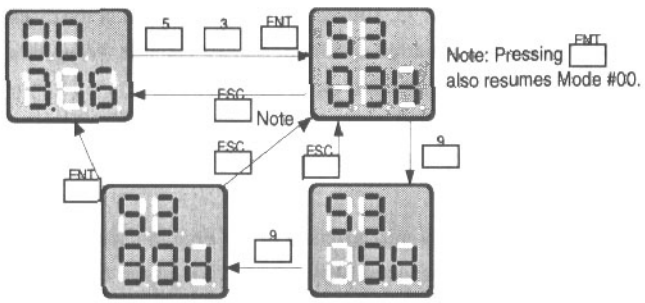
Unlike Modes #50 and #51, this mode does not forcibly stop drives. Use a host computer to control the drives. However, a drive in aging mode stops when it reads TOC (SCSI ID=0) or the inner or outer periphery for 1 minute (SCSI ID=1). Thus, operations may be able to DC proceeded by detecting these conditions.

The changer checks disc presence/absence in the mail slot, once immediately after moving a disc from the carrier block to the mail slot, and again after opening/closing the mail slot.

In the same manner as mode #50, the upper row of the mode indicator shows the current step and the lower shows the current cycle.

Mode #53: Mode to set the time of duration for Mode #51 (Mode B)

You can set 1 to 99 hours. The default is 3 hours. Setting 0 continues aging endlessly.



The illustrations above show the flow of setting 99 hours. When the changer enters Mode #53, the currently fixed value for time is displayed. If you only press ESC or ENT, the changer resumes Mode #00 without changing the time setting. To change the setting, directly enter the desired time without pressing ESC. When you press ENT, your setting is registered. If you press ESC before the setting is registered, the changer resumes the default value, not the previously set value.

The values set in Mode #53 revert to the default when Test modes are terminated.

Mode #54: Mode to set the number of cycles for Mode #50 (Mode A)

You can set 1 to 999 cycles. It takes about 2 hours for 50 cycles of aging and about 40 hours for 999 cycles. The default is 550 cycles, or about 22 hours. Setting 0 continues aging endlessly.

The setting procedure is the same as for Mode #53. The values set in Mode #54 revert to the default when Test modes are terminated.

Mode #55: Mode to set the starting address

You can set the top address to start aging. The default is address 100.

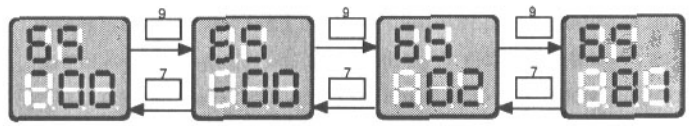
In Mode #50 or #51, the addresses to which discs are returned are automatically updated. As the changer has a function to automatically update the starting address setting during aging operations, you can restart aging with the ENT key even after you interrupt aging by pressing the ESC key. Even after aging mode is once canceled, returning to Mode #00, it is also possible to restart it in the same condition even though the cycle or time counting has been reset. When the changer enters Mode #55 after aging was once interrupted, the indicator shows the address for the next operation of aging.

The values set in Mode #55 and updated in aging operations revert to the default when Test modes are terminated.

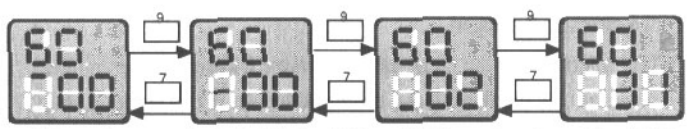
7.11 Mode 6: Reference mode of the time duration of being powered and the number of times of operations

You can read the time duration of being powered and the number of times of operations from nonvolatile memory.

In Mode #65, to read out the number of times, a value of 8 digits is displayed by each 2 digits. When you press the ENT key, the most significant 2 digits are displayed and each time you press key 9, the display changes to the next lower 2 digits in sequence. The example below shows the display when the total (accumulated) number of times of elevating operations since power was turned on for the first time is 281. The left digit in the lower row of the mode indicator indicates which digits of the value are now displayed.



In Mode #60 to read out the time duration, the value is displayed in 6 digits, 4 for hours and 2 for minutes. The example below shows that the accumulated time of being powered since power was turned on for the first time is 2 hours 31 minutes.



The values read out in Modes #60 and #65 can be cleared only by using Mode #84, to be mentioned later. The values read out in Modes #61 to #64 are total playback time of each respective drive. The playback time is obtained by counting the time elapsed while the spindle of the drive is rotating. The playback time of drives can be cleared individually by using Mode #83.

7.12 Mode 7: Demonstration mode

Demonstration mode is normally used for circuit-design checks or presentations. Mode 7 consists of 8 submodes from #70 to #77, each of which has a specific function.

Mode #70: Demonstration of the elevating operation

This mode performs only elevating operations repeatedly. It counts a get-and-return movement between the lowest elevating address (address 1) and the highest address (address of the mail slot) as one cycle. The operation is performed at the minimum speed when Function switch 5 (bit 5) is set to ON.

Mode #71: Demonstration of the reader's external control test

Start the operation with 5 discs set to addresses 1 to 5. The disc at address 1 will be set into drive 1, the disc at address 2 will be set into drive 2, etc. so that 4 discs are set into the four drives. After checking the start-up process, the changer leaves the discs in the drives unoperated, and only repeats the operation to carry the disc at address 5 to the mail slot. The mail slot opens/closes only at cycles 1, 11, 21, and so on.

This mode is specifically designed to measure electric waves. Unlike the other modes, this mode cannot be terminated with the ESC key. To stop the operation, turn the power off.

Mode #72: Demonstration of temperature-rise tests

Start the operation with 5 discs set to addresses 1 to 5. The disc at address 1 will be set to drive 1, the disc at address 2 will be set into drive 2, etc. so that 4 discs are set into the four drives. After checking the start-up process, the changer repeats the operation to carry the disc at address 5 to the mail slot for about 2 minutes. After 2 minutes has elapsed, it forcibly stops the drives and returns the discs to the original slots. The demonstration is repeated, counting one cycle each time all the discs are returned to the original slots.

This mode is specifically designed for temperature-rise tests. To fulfill strict requirements, the mail slot does not perform any open/close movement.

Mode #73: Demonstration of checking for disc presence/absence

While operation is the same as in Initialize Element Status mode, you can specify the starting and ending addresses in this mode. Using this mode, you can check the disc presence/absence sensor in the disc carrier block or perform independent aging of the loading mechanism.

Mode #74: Demonstration of mechanism operations for exhibition

A series of operations using 7 discs with drives 2 and 4 is demonstrated in this mode. Start the demonstration with the discs set in slots 1, 25, 50, 51, 75, 100 and the mail slot. Each of the discs carried to the drive is started up for approx. 10 seconds. When this start-up time is elapsed, the disc is forcibly stopped.

Mode #75: Demonstration of measuring the time to change discs

This mode enables easy measurement of the time to change discs, using 2 discs. The discs are always used at addresses 1 and 100, specifically with drive 2.

Mode #76: Demonstration of the writer's external control tests

Start the operation with 3 discs set to addresses 2 to 4. The disc at address 2 is set into drive 2. After completing the start-up process, the changer leaves drive 2 unoperated, and only repeats the operation to carry the disc at address 3 to drive 3 and the disc at address 4 to drive 4 and return them to the original slots.

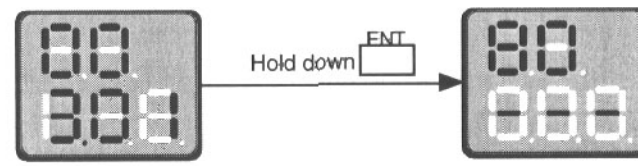
This mode is specifically designed to measure the performances of the writer (drive 2).

Mode #77: Demonstration assuming actual usage conditions

This mode is almost the same as Mode #75, but discs should be set to addresses 25 and 75. The changer carries a disc to drive 2, starts it up, then returns it to the original slot after waiting for about 10 seconds.

7.13 Mode 8: Data Clear mode

As described in paragraph 7.3 (to change among Test modes), the process to enter Mode 8 is different from those of other modes. Press the ENT key in Mode 0 and hold it down for about 4 seconds until the mode indicator changes.



In this condition, enter the corresponding submode number and press the ENT key to select a desired data clear mode. In any submode, pressing the ESC key resumes Mode 0. To clear another data area, you must start the operation again from the initial step of pressing the ENT key for 4 seconds. To return to the initial status of a submode, release the pressed key when "End" is displayed showing that data clearing in that submode is completed. By entering another

submode number in this standby state for submode selection, you can directly select the desired data clear submode.

Mode 8 consists of five submodes 0 to 4. Data to be erased in each mode are as follows.

Mode	Data to be erased	Display
80	Disc presence/ absence data	SCL
81	Error history	ECL
82	Disc destination memorydCL	dCL
83	Total playback time of each drived-n	d - n
84	Entire data area of EEPROM	ACL

Note: Mode #84 covers Modes #82 and #83, but not Mode #80. Although the area for data on disc presence/ absence is erased also in Mode 84, it is not the same as in Mode #80. For details, see the description of Mode #80.

Mode #80: Clearing all the disc presence/absence data

Each storage element can have one of four states: "valid-occupied," "valid-vacant," "invalid," and "temporarily-absent," which is recorded as disc presence/absence data. When clearing is executed in Mode #80, data of all the 100 storage elements are changed to "valid-vacant."

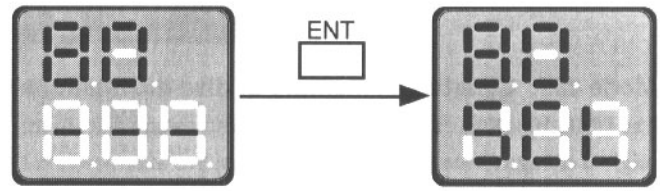
As described in paragraph 7.7, data of all the 100 storage elements are changed to "invalid" when the door is opened. When a storage element in "invalid" state is specified as the source element, the DRM-1004X starts an operation assuming that there is a disc inside it (for safety reasons). As the presence/absence of a disc can be determined by the disc presence/absence sensor on the carrier mechanism block, the state will change from "invalid" to "valid-vacant" or "valid-occupied" when the changer performs a loading operation to the carrier block. In the case of "-vacant," the command is then interrupted. The carrier block performs a dummy unloading operation and stands by for another operation. In the case of "-occupied," the disc is carried to the specified destination element and the disc presence/absence data of the source element changes to "temporarily-absent." If a storage element in "invalid" state is specified as the destination element, the DRM-1004X refuses the command in order to eliminate damage to the disc and carrier mechanism, which may occur if another disc has already been set in the destination storage element.

While two-value (full and empty) data are normally used for SCSI controls, these four states are used in the DRM-1004X on the principle of safety first.

If a storage element in "invalid" state is specified either for the source element or the destination element when a disc is being installed using the mail slot, the command will be interrupted or refused, or a disc presence/absence check will be performed regardless whether it is being controlled though SCSI or operated from the control panel. If the door is opened/closed even when there is obviously no disc, like at the first installation right after purchase, this will be an annoying waste of time.

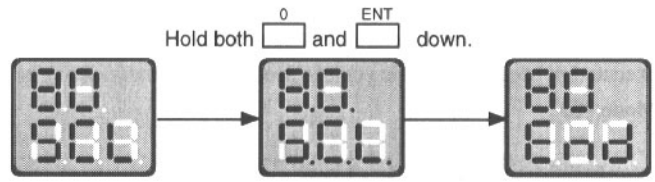
Mode #80 is effective in such cases. While the same function is also obtained by using the WRITE BUFFER command of SCSI. You can achieve it with Mode #80 without using a host computer. However, similarly to using the WRITE BUFFER command, sufficient care must be taken not to set "valid-vacant" when there is actually a disc inside. Otherwise, serious damage may be caused.

When you press the ENT key in the standby state for submode input, the changer enters Mode #80.



The lower row of the mode indicator shows the abbreviated designation of each mode. In Mode #80, it shows "SCL" for "Storage Element Clear," not "5CL."

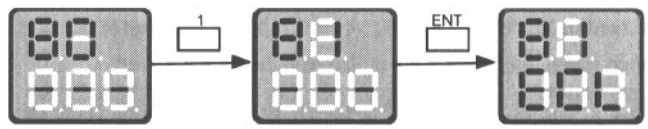
To eliminate inadvertent clearing, execution requires additional simultaneous pressing of the 0 and ENT keys for about 4 seconds. When this simultaneous pressing is detected, all the dots of the indicator start blinking. Hold the keys down until the indication changes to "End." If you release the keys early, the initial status before the dots started blinking is resumed. Pressing the ESC key resumes Mode #00 regardless of whether clearing is completed or not.



When clearing is completed, the indication changes to "End." The lower row indicates "- - -" waiting for new submode-number input.

Mode #81: Clearing the entire error history

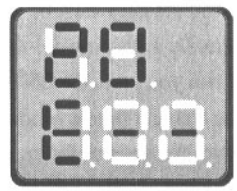
This mode clears the error history, which can be seen in Mode #20. The indication for this mode is "ECL" for "Error Clear (not Element Clear)."



The operation method is the same as in Mode #80.

By subsequently selecting Mode #20, you can check whether the history has been correctly cleared. To select Mode #20, press the ESC key to resume Mode #00, then press the 2 and ENT keys in sequence.

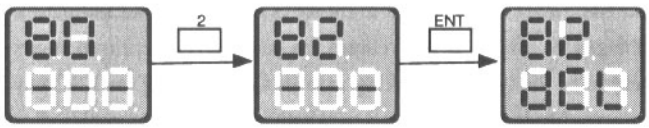
When the error history has been completely cleared, the indicator shows "E - -."



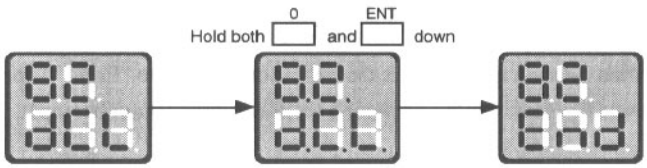
Mode #82: Clearing all memory of disc destinations

The DMR-1004X has a function to automatically return discs to the original storage elements when power is reapplied after power has been turned off with the discs remaining in the drives. Although a certain area in nonvolatile memory is retained to activate this function, some peculiar operations in Test modes may lead to a condition where memory is only maintained even if there is actually no disc in the drive. In this case, initialization upon application of power may generate an error because of the contradiction.

Use Mode #82 to cancel such a condition.

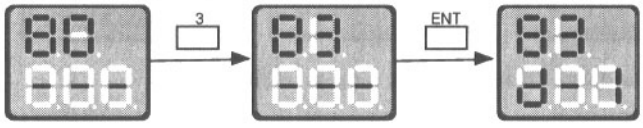


The letter "d" of the indication "dCL" represents "disc." Note that the meaning is different from that in Mode #83. Total clearing is executed in Mode #82, while you can specify drives individually in Mode #83.

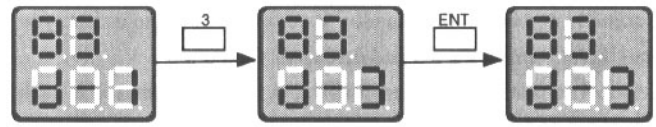


Mode #83: Clearing the total playback time of each drive

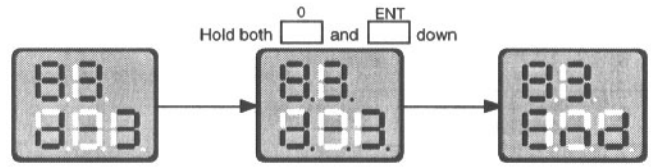
This mode clears the total playback time of each drive, which can be read in Modes #61 to #64. As this mode is intended to be used when replacing or repairing a disc, you can select drives.



Regardless of the number of the built-in drives, the lower row of the mode indicator first shows "d-1." The figure at the far right end represents the drive number. You can select any desired drive 1 to 4 before fixing the selection by pressing the ENT key again.

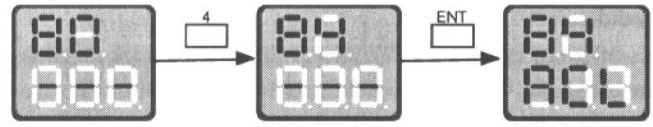


The clearing procedure is the same as in the other clear modes. Once you release the keys when clearing is completed, the mode returns to standby state for new drive-number input. Thus, you can clear the drives one after another.

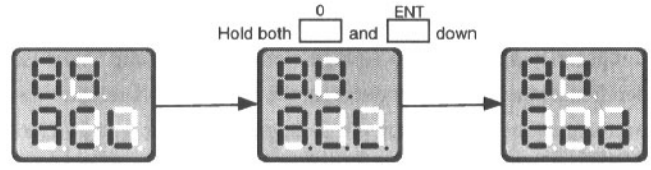


Mode #84: Clearing all the EEPROM data

All the various nonvolatile data mentioned above are stored in an EEPROM. Mode #84 is used to collectively clear these data in the EEPROM before factory delivering, etc.



"ACL" means "All Clear." In addition to the error history, disc-destination memory, and total playing time of each drive, the accumulated time duration of being powered (see Mode #60) and the total number of times of elevating operations (see Mode #65) are also cleared. Unlike Mode #80, this mode sets all the storage elements to "invalid" for disc presence/absence data. This is the same as when the door is opened.



It is convenient to use Mode #65 to check the result of clearing. This is because counting of the value seen in Mode #60 will already be restarted as soon as clearing in Mode #84 is completed.

7.14 Error Codes and Troubleshooting

The DRM-1004X displays an error code and stops operating when determines that it can no longer continue the operation. The drives, however, will not be forcibly stopped as a disc may be in use in one of the drives. For the error codes, see the table below. The same table is also found inside the front door.

エラー番号	Estimated Cause	推定される原因
83	Disc mounted uncorrectly	マガジンからのディスク飛び出し
86	No response form elevation motor FG	ロータリーエンコーダ不良
87	No response from elevation sensor	昇降アドレスセンサー不良
88	Driver of elevation motor locked	昇降モーター異常負荷
89	Time over of Elevation movement	昇降動作タイムオーバー
97	Loading Mechanism switches are connected correctly	ローディングスイッチが正しく読めない(フレキ外れ等)
98	Loading Mechanism moved uncorrect position	ローディングメカの不当なポジションへの移動
99	Time over of Loading movement	ローディング動作タイムオーバー
9A	Disc transporter can't sense a disc	搬送部ディスクセンサー不良
A6	Drive #1 is not connected correctly	ドライブ#1接続不良
A7	Time over of spinning up Drive #1	ドライブ#1立ち上がらない
A8	Time over of spinning down Drive #1	ドライブ#1停止しない
A9	Time over of Drive #1 clamper movement	ドライブ#1クランパ動作タイムオーバー
B6	Drive #1 is not connected correctly	ドライブ#2接続不良
B7	Time over of spinning up Drive #2	ドライブ#2立ち上がらない
B8	Time over of spinning down Drive #2	ドライブ#2停止しない
B9	Time over of Drive #2 clamper movement	ドライブ#2クランパ動作タイムオーバー
C6	Drive #3 is not connected correctly	ドライブ#3接続不良
C7	Time over of spinning up Drive #3	ドライブ#3立ち上がらない
C8	Time over of spinning down Drive #3	ドライブ#3停止しない
C9	Time over of Drive #3 clamper movement	ドライブ#3クランパ動作タイムオーバー
D6	Drive #4 is not connected correctly	ドライブ#4接続不良
D7	Time over of spinning up Drive #4	ドライブ#4立ち上がらない
D8	Time over of spinning down Drive #4	ドライブ#4停止しない
D9	Time over of Drive #4 clamper movement	ドライブ#4クランパ動作タイムオーバー
E9	Time over of Mail-Slot movement	メイルスロット動作タイムオーバー
F1	Data in the EEPROM is invalid	EEPROMバックアップデータ異常
F2	Magazine mounted uncorrectly	マガジンロックスイッチ不良
F3	Front door could not open	ドアスイッチかプランジャーの不良
F8	Disc transproter can't catch a disc	搬送部メカニズム不良(エージングモード)
F9	Mail-Slot can't sense a disc(export)	メイルスロットディスクセンサー不良(出すとき)
FA	Disc slipped in the Mail-Slot(import)	メイルスロットディスクセンサー不良(いれるとき)

Errors related to drives are identified by drive number. Most of these errors A6 to D9 are due to improper connection or a defective disc. Checking by turning the power on and off power causes no problem.

In the case of errors owing to timeout in mechanism movements, such as 89, 99 and E9, power reset may worsen the situation. If one of these errors occurs, first check for "what has happened at which block" using Test Mode #30 or #31. Open the door when required, and give top priority to eliminating the cause.

8. ADJUSTMENTS

8.1 MECHANISM ADJUSTMENTS

• ADJUSTMENT OVERVIEW

1. Adjustments for Mechanical Operations

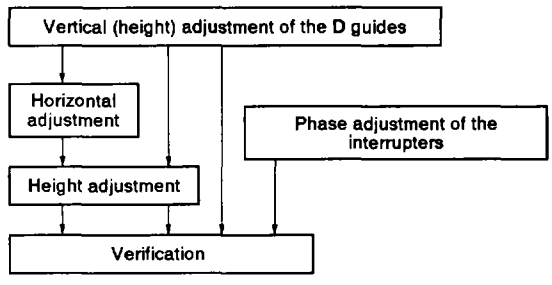
1.1 Vertical (height) adjustment of the D guides
Purpose: To adjust the top height of the D guides with respect to the reference surface of the carriage base
Method: Turn the D guide adjustment screw (DG height pin) on the carriage base.

1.2 Horizontal adjustment of the carriage base
Purpose: To adjust the carriage base so that it becomes horizontal to the main unit
Method: Move up or down the belt stopper which connects between the elevator belt (on the left side) and the carriage base.

1.3 Vertical (height) adjustment of the encoder plate
Purpose: To align the stop position of carriage base elevation with the disc magazine.
Method: Move up or down the encoder plate by turning the encoder plate adjustment screw on the main unit.

1.4 Phase adjustment of the UP and DN interrupters
Purpose: To adjust the stop position range of carriage base elevation to 0.45 mm
Method: Set the UP interrupter (movable one) 0.45 mm higher than the DN interrupter (fixed one) by turning the encoder plate adjustment screw on the main unit.

1.5 Verification of operations after adjustments



- Be sure to confirm the height of the D guides before the horizontal adjustment of the carriage base and the height adjustment of the encoder plate.
- Be sure to check the height of the encoder plate when the horizontal adjustment has been performed.
- Perform the phase adjustment of the interrupters in conjunction with other adjustments as required.

2. Sensitivity adjustment of the carriage base disc sensor
Purpose: To adjust the sensitivity of the disc sensor of the carriage base
Method: Adjust the phototransistor output of the light – receiving block on the carriage base.

3. Carrier frequency adjustment
Purpose : To adjust the carrier frequency of the LED of the light-emitting block.
Method : Turn VR102 of the MMCB unit.

4. Sensitivity adjustment of the disc out-of-position sensor of the magazine
Purpose: To adjust the sensitivity of the disc out-of-position sensor of the magazine
Method: Adjust the LED output of the light-emitting block.

Caution: Do NOT turn the volume control in normal use. Adjust it only when replacing LEDs.

5. Elevating speed adjustment of the Carriage Base
Purpose : To adjust the elevating speed of the Carriage Base.
Method : Turn VR401 of the VMDB unit.

• Tools for adjustments

ⓐ : Phillips screwdriver (nominal No.2 for M3 cross-recessed head machine screws)
ⓑ : Phillips screwdriver (nominal No.3 for M2.6 cross-recessed head machine screws)
ⓒ : Flat-head screwdriver (nominal 5.5 x 75; for M2.6 slotted head machine screws)
ⓓ : Allen wrench (nominal 2.5 for M3 hexagon socket head cap screws)
ⓔ : Allen wrench (nominal 1.5 for M3 hexagon socket set screws)
ⓕ : Door key
ⓖ : Screw tightener
ⓗ : Adjustment disc
ⓘ : Adjustment filter
ⓙ : Flat-head screwdriver for volume adjustments (2.4 mm, non-conducting type or an equivalent)

Indications ⓐ to ⓙ at the end of paragraphs in the following indicate the tools to be used in the respective steps.

• Preparations for adjustments

For adjustments of the mechanical operations

1. Remove the L and R side panels and the top panel. ⓐ
2. Open the door and pull out the magazines. ⓕ
3. Set function switch 5 (the fifth switch from the top) to ON (toward the front) to set elevating operations to low-speed mode.

Caution: Be sure to perform this step, as this unit operates at a high speed.

4. Push the door switch to cancel the operation limits.
5. Set the unit in Test mode (hold [0] and [ENT] pressed for four seconds).

* Be sure to return the function switch to OFF when the adjustments are completed.
* As adjustments are to be performed with visual observation, set the unit in a well-lit place, such as under a fluorescent lamp.
* Note that the manual elevating operation mode activates even when the D guides have been protruded.
* Sufficient care must be taken as the chuck block is protruded if you rotate the turntable clockwise in a manual loading operation. Especially, it causes a damage if protruded in a location other than the disc rack and player.

For sensitivity adjustment of the carriage base disc sensor

1. Remove the L and R side panels and the top panel. ⓐ
2. Set the unit to Test mode (hold [0] and [ENT] pressed for four seconds). ⓕ

For sensitivity adjustment of the magazine disc out-of-position sensor

1. Remove the L and R side panels and the top panel. ⓐ
2. Open the door and pull out the under magazine. ⓕ

• Adjustment methods

- The figures in brackets, such as 【001】, in the following represent the position of the carriage base displayed in the lower row of the mode indicator when you move it up or down in Manual elevating operation mode of the Super manual operation modes.
- To move the carriage base up or down by hand, remove the front cover at the bottom of the front panel and turn the pulley or the belt of the vertical drive motor.

(Upward with counterclockwise rotation and downward with clockwise rotation. See Paragraph 9.5.)

1.1 Vertical (Height) Adjustment of the D Guides L and R

- Contents:
  Adjust the top heights of the D guides L and R on the carriage base.
  Adjust the upper surface of the D guides to 31 ± 0.2 mm higher than the reference surface of the carriage base.
- Preparation:
  Set the unit to Manual elevating operation mode. ([30] + [ENT], upward with [7] and downward with [9])
- Adjustment point:
  DG height pin

(A) Left side

1. Move the carriage base to a position (around 【075】 to 【100】) which permits it to be seen from the front and the loading motor to be rotated.
2. Rotate the loading motor in Manual loading operation mode ([ENT], counterclockwise with [7] and clockwise with [9]).

Caution : Do not turn it clockwise to avoid a damage.

3. Stop the rotation when the turn table has been turned about 70 degrees from the front.
4. Using a measuring device, confirm that the distance between the upper surface of the carriage base and the upper surface of the D guide is 31 ± 0.2 mm.
   If not, adjust the D guide adjustment screw. ⓒ
5. Lock the screws when the adjustment is completed. ⓖ

(B) Right side

1. As with the left side, rotate the turn table counterclockwise and stop it when it has been rotated about 290 degrees from the front.
2. The subsequent procedures are the same as for the left side.

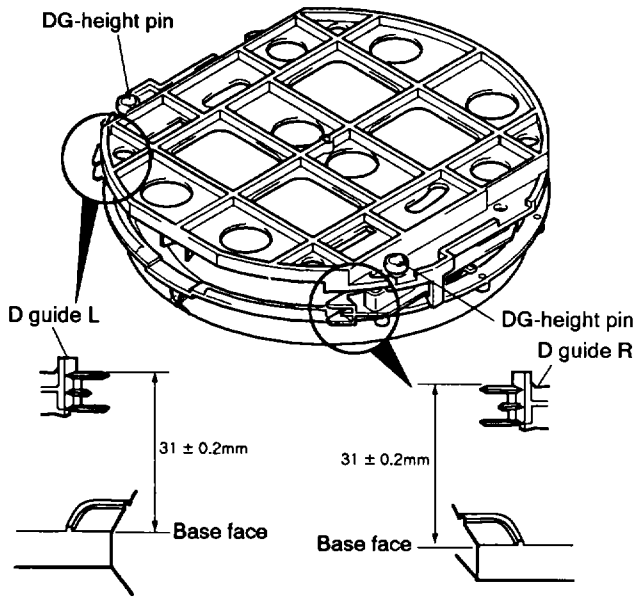


Fig.1 Vertical Adjustment of the D guide L and R

1.2 Horizontal Adjustment of the Carriage Base

• Contents:

Adjust the height of the left mounting position of the belt stopper which connects the carriage base and elevating belt, so that the carriage base becomes horizontal.

Adjust the levelness of the carriage base so that the difference between the left and right is less than 0.3 mm.

• Preparation:

Set the unit to Manual elevating operation mode. (30 + ENT , upward with 7 and downward with 9)

Prepare the upper magazine.

(Be sure not to set the upper four discs from the 97th to 100th.)

• Adjustment point:

Eccentric bushing

* Confirm the height of the D guides in advance. Be sure to check the height of the encoder plate when the adjustment is completed.

1. Move the carriage base to 【51】~ 【70】 .
2. Set the upper magazine only.
3. Manually rotate the loading motor to once bring the D guides out to the front, then rotate it in the reverse direction until the D guides no longer touch the magazine (set to a state just before the turntable would start to rotate).

Caution: Check that the D guide does not overlap the magazine as viewed from directly above. Moving the carriage base up and down with such overlap will damage the unit.

4. Move the carriage base to 【99】 .
5. While observing through the hole at the top of the magazine, manually move the carriage base up and down to align the slot of the disc rack R on the right side with the right side of the D guide.
6. Confirm visually that the difference in height between the slot of the disc rack L on the left side and the left side of the D guide is less than 0.3 mm. If not, perform the following adjustment.

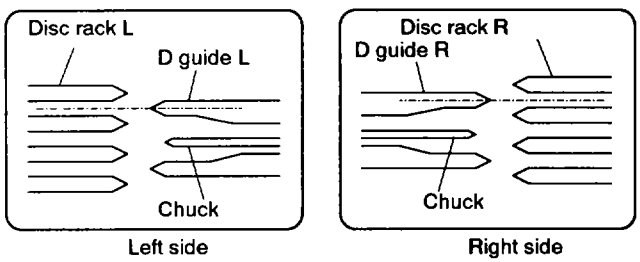


Fig.2

Note: Do not use the position of the chuck, as it may not be accurate.

7. Temporarily move the carriage base down (to around 【063】) to enable adjustment of the eccentric bushing.
8. Loosen the hexagon coupling bolt for fixing, then temporarily tighten it. ⓓ
9. If the left side is lower, turn the eccentric bushing clockwise as necessary, and if the left side is higher, turn it counterclockwise as necessary.
   (clamping torque : 9 kg-cm). ⓒ
10. Perform steps 1 to 3 for verification. If the difference still exceeds 0.3 mm, repeat steps 4, 5, 6, 1, 2 and 3 in sequence.
11. Lock the screws when the adjustments are completed. ⓖ

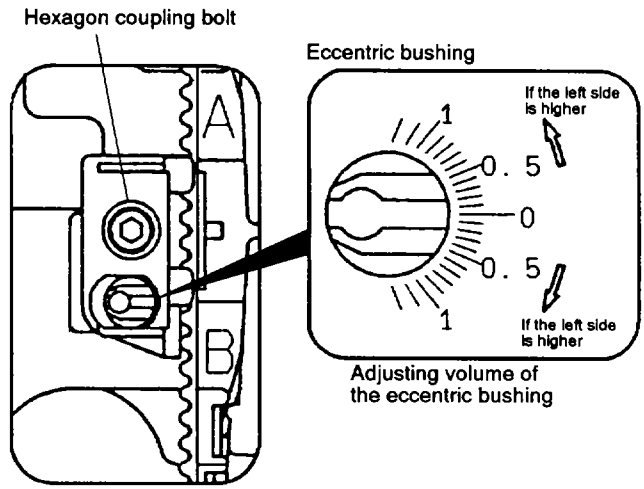


Fig.3 Hole for adjustment of the side frame L block (when the carriage base is positioned at 【063】 .)

1.3 Vertical (Height) Adjustment of the Encoder

• Contents:

Adjust the height of the encoder plate to align the height at which the carriage base stops with the magazine.

• Preparation:

Set the unit to Manual elevating operation mode. (30 + ENT , upward with 7 and downward with 9)

Prepare the upper magazine.

(Be sure not to set the upper four discs from the 97th to 100th.)

Adjustment point:

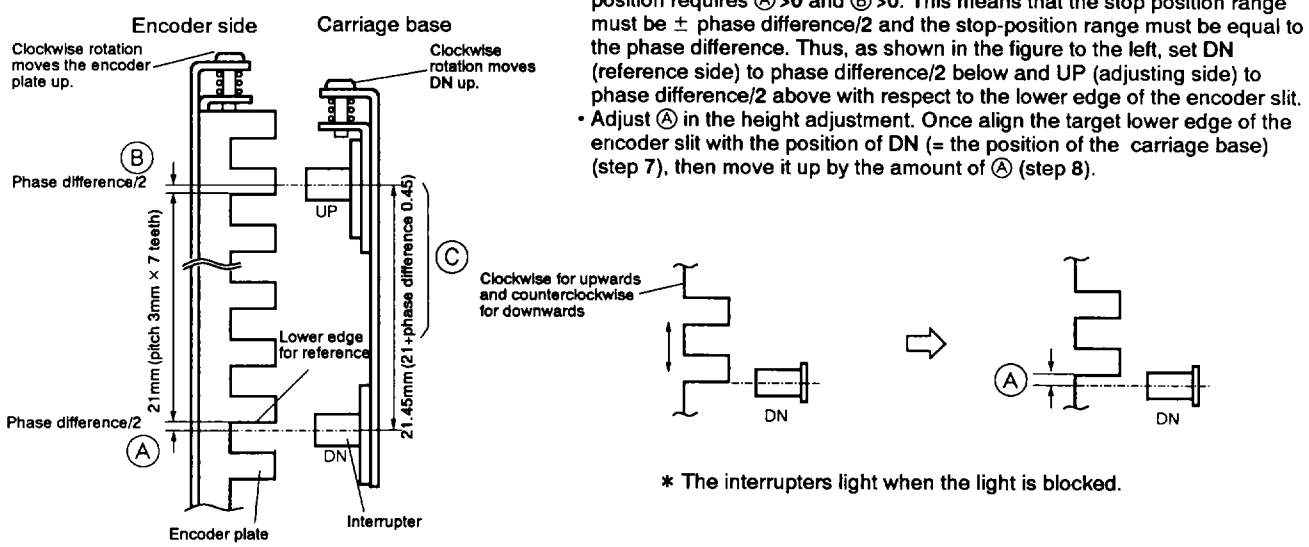
Height-adjustment screw

The LED for monitoring the interrupter output is located on the flexible relay board (DN interrupter: red).

* Confirm the height of the D guides in advance.

1. Move the carriage base to【99】.
2. Manually rotate the loading motor to once bring the D guides out to the front. (Set to a state just after the D guides have come out from the carriage base. Do not move the chuck outward.)
3. While observing the red LED, manually move the carriage base slightly up and stop it immediately when the red LED lights up.
   If the red LED is already lit, first move the carriage base slightly down.
4. When the upper magazine is slowly inserted, it engages with the D guides just before it locks. While observing through the hole at the top of the magazine, confirm that the D guides are not moved by the magazine. If they move, perform the following adjustment.
5. If the D guides move, loosen the three silver-colored screws on the side frame which secure the encoder plate (be careful not to back them out too far don't let them touch the weight) and loosen the lock screw so that a gap of over 1 mm is obtained to enable the adjustment. ⓐⓔ
6. Manually set the carriage base to the position where the magazine does not touch the D guides when it moves in and out in the above-mentioned way.
   While moving the carriage base up or down little by little, find a position where the D guides do not move even when the magazine is moved in and out.
   Find a position of the carriage base relative to the magazine. As this position is used as the reference for adjustment of the encoder plate, do not move or even touch the carriage base after its position is determined.
7. Turn the height adjustment screw clockwise and stop it when the red LED goes off. (If the LED was not lit when starting the adjustment, first turn the screw counterclockwise to light the LED.) ⓑ
   Temporarily align the lower edge of the encoder plate with the DN interrupter.
8. Further turn the screw 180 degrees (170 to 190 degrees) clockwise then stop it.
   Offset half the phase difference.
9. Fasten the lock screw (clamping torque: 0.6 kg-cm) and the three screws on the side frame in sequence to secure the encoder plate.

<Principles>



- The figure to the left shows the center of the stop position of the carriage base. The purpose of the adjustment is to obtain this status. The stop position requires Ⓐ>0 and Ⓑ>0. This means that the stop position range must be ± phase difference/2 and the stop-position range must be equal to the phase difference. Thus, as shown in the figure to the left, set DN (reference side) to phase difference/2 below and UP (adjusting side) to phase difference/2 above with respect to the lower edge of the encoder slit.
- Adjust Ⓐ in the height adjustment. Once align the target lower edge of the encoder slit with the position of DN (= the position of the carriage base) (step 7), then move it up by the amount of Ⓐ (step 8).

* The interrupters light when the light is blocked.

Fig.4 Adjustment model view

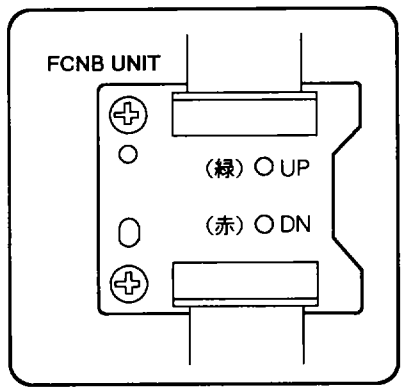


Fig.5 FCNB UNIT

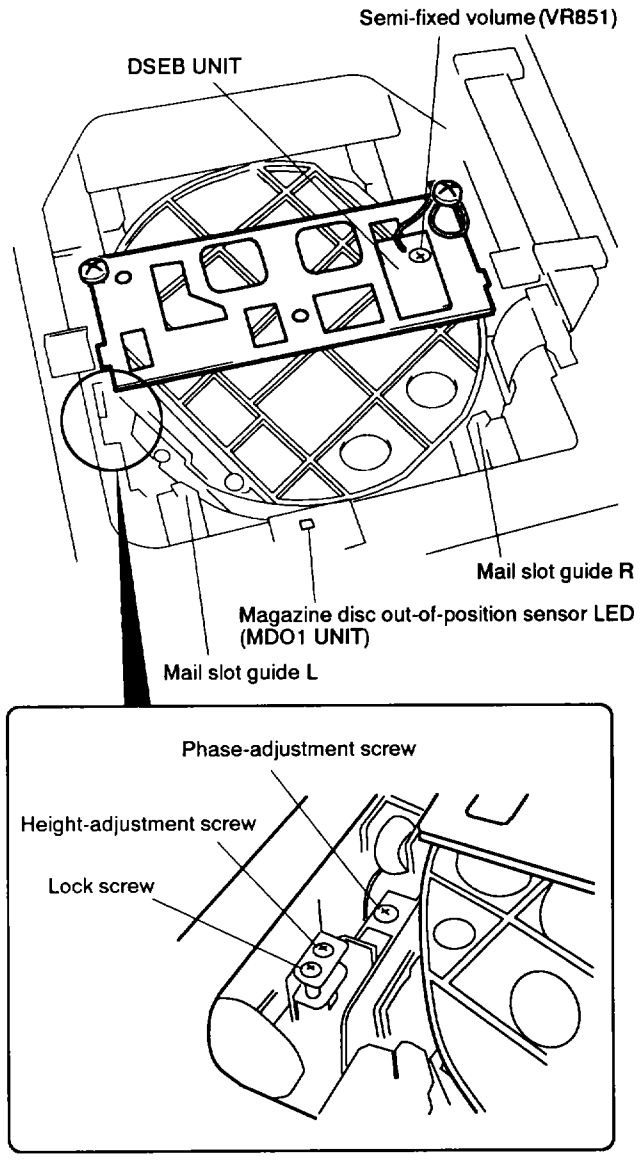


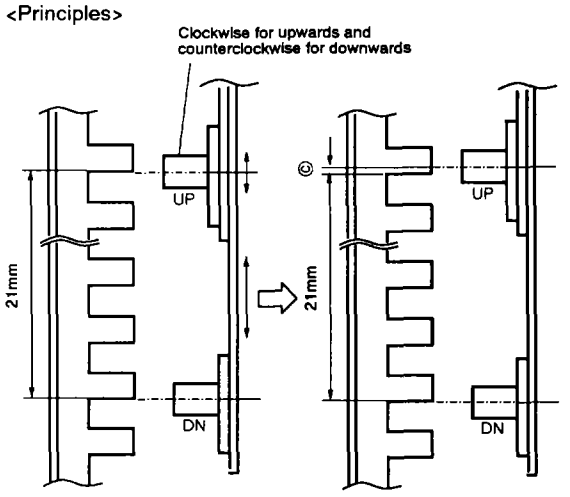
Fig.6 Adjustment point of
Vertical (Height) Adjustment of the Encoder

1.4 Relative Adjustment of the UP and DN Interrupters

- Contents:
  Adjust the phase difference (relative height) between the two interrupters on the carriage base to 0.45 mm.
- Preparation:
  Set the unit to Manual elevating operation mode. (30 + ENT , upward with 7 and downward with 9)
- Adjustment point:
  Phase-difference adjustment screw
  The LEDs for monitoring the interrupter outputs are located on the flexible relay board (UP interrupter: green, DN interrupter: red).

1. Move the carriage base upward (to around 【100】 to 【1EE】) to permit easy access to the phase-difference adjustment screw.
2. While observing the red LED, slowly move the carriage base up by hand and stop it immediately when the red LED lights.
   Important: Be sure to stop the carriage base in an upward movement.
3. Turn the phase-difference adjustment screw clockwise and stop it when the green LED lights. (If the LED is already lit when starting the adjustment, once turn the screw counterclockwise to turn the LED off.) ⓑ
   Once set the UP and DN interrupters to the same phase.
4. Verification: Once move the carriage base down until the red LED goes off, then slowly move it up again to check that the two LEDs simultaneously light. If they do not light simultaneously, repeat the adjustment from step 2.
5. While observing the red LED (interrupter), slowly move the Carriage Base up or down by hand and stop it immediately when the red LED lights. Be sure to stop the Carriage Base in an upward movement.
6. From the state at the moment when the red LED lights, turn the phase-difference adjustment screw clockwise 360degrees (350 to 370 degrees).
7. Lock the screws when the adjustment is completed. ⓖ

<Principles>



* The interrupters light when the light is blocked.

• Adjust © (Ⓐ+Ⓑ) in the UP-DN phase adjustments.
After aligning the DN interrupter with the lower edge of the encoder slit (step 2), temporarily align the UP interrupter also with the lower edge (step 3).
After confirming that the DN and UP interrupters are in place (step 4), align the DN interrupter with the lower, edge again (step 5) and move the UP interrupter upwards by the amount of © (step 6).

Fig.7 Adjustment model view

1.5 Verification of Operations after Adjustments

Perform the verification after the height adjustment of the D guides, horizontal adjustment of the carriage base, height adjustment of the encoder plate, or phase adjustment of the UP-DN interrupters is completed.

1. Set the unit to Manual elevating operation mode (30 + ENT , upward with 7 and downward with 9)
2. Move the carriage base to 【99】 .
3. Set the upper magazine only.
   (Be sure not to set the upper four discs from the 97th to 100th.)
4. Rotate the turntable in Manual loading operation mode (ENT , counterclockwise with 7 and clockwise with 9) to move the D guides out towards the front and rotate the table in the reverse direction to return to a position where the magazine does not touch the D guides.
   Set to the state just before the turntable starts rotating.

Caution: A Manual loading operation may not be allowed, depending on the position of the carriage base or turntable. Be sure to just lightly touch (or momentarily push) the switch when operating it.

5. Observe through the hole at the top of the magazine to check that there is no misalignment in gear teeth or in height between the slot of the disc rack R on the right side and the right side of the D guide or between the slot of the disc rack L on the left side and the left side of the D guide.

2. Sensitivity adjustment of the Carriage Base disc sensor

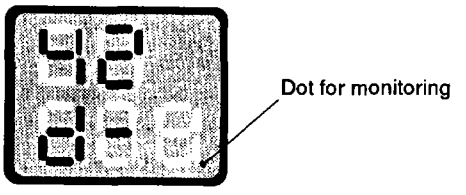
• Content:
Adjust the phototransistor output of the light-receiving block.
Find a point where the sensor responds to the screen factor of the adjustment disc.

• Preparation:
Prepare the adjustment disc.

Set the unit to Step operation mode (40 + ENT).

• Adjustment point:
Semifixed volume control (VR851, DSEB unit)
Use the dot at the lower right end of the mode indicator for monitoring the sensor output.

1. Move the carriage base to the mail-slot position. (101 + ENT)
2. Open the mail slot, insert the adjustment disc, then close the slot. (Mail-slot OPEN/CLOSE key) ⓗ
3. Pull the adjustment disc in the carriage base and once return it to the mail slot (ENT + ESC + ESC).
4. Pull the adjustment disc in the carriage base again (ENT + ENT).
5. Observe the dot for monitoring. If it is lit, turn the semifixed volume control counterclockwise, and if it is off, turn the volume control clockwise.



6. Return the adjustment disc to the mail slot. (ESC + ESC)
7. Repeat steps 4 and 5 until the dot for monitoring changes its status and adjust the volume setting to a position at which the dot indication is reversed.
   Set the semifixed volume control within 10 degrees from the reversing point.
8. When the adjustment is completed (state in step 6), remove the adjustment disc from the mail slot. (Mail-slot OPEN/CLOSE key).

3. Carrier frequency adjustment

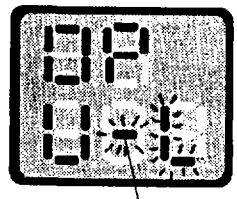
• Contents:
Adjust the carrier frequency of the LED of the light-emitting block.
Connect a frequency counter to TP101 of the MMCB unit on the right side and adjust the frequency.
• Preparation:
Prepare the frequency counter.
• Adjustment point:
Semifixed volume control (VR102).
Connect TP101 via a probe to the frequency counter.
1. Turn VR102 to set F=40.0 ± 0.1kHz.

Note :Use an adjustment screwdriver (having a plastic grip) for volume controls.

4. Sensitivity adjustment of the magazine disc out-of-position sensor

• Contents:
Adjust the LED output of the light-emitting block.
Set the threshold value to the combined screen factor of the adjustment disc and filter.
• Preparation:
Prepare the adjustment disc and adjustment filter.
(Pull out the lower magazine.)
If the carriage base is located in the upper area, move it down.
• Adjustment point:
Semifixed volume control (VR301, SSB2 unit)
For sensor output monitoring, use the 7 center segments in the lower row of the mode indicator.

1. Through the center hole of the upper chassis, insert the adjustment disc in the guides L and R of the mail slot so that it blocks the optical axis of the magazine disc out-of-position sensor LED (MD01 unit). ⓗ
2. Place the adjustment filter on the adjustment disc so that both the disc and filter block the optical axis of the LED. ⓘ
3. While you return the volume control little by little toward the right after turning it fully counterclockwise, the lit segments begin blinking irregularly. When you further turn the volume control, the blinking will synchronize with that of the letter L (indicated with the lower right 7 segments). Set the volume control to the point at which the synchronizing starts. ⓙ



Segments for monitoring

5. Elevating speed adjustment of the carriage base

• Contents:

Adjust the elevating speed of the Carriage Base.
(Be sure to perform this adjustment when VR401, C406, IC402 or R406 in VMDB unit has been replaced or VR401 has been turned.)

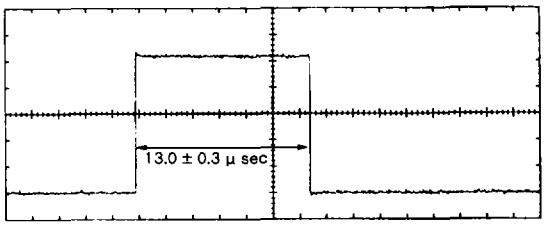
• Measurement device connection:

Connect an oscilloscope (10 : 1 probe) to pin 2 (MMOUT) of CN404 in the VMDB unit.

Note : If you short-circuit MMOUT, the Carriage Base may move irregularly. Be sure to check the power unit and Carriage Weight when you use the Chassis for GND.

• Procedure:

1. Open the front door and set the function switch SW5 (fourth switch from the bottom) back in the front panel to ON (toward the front).
2. Turn the power off and then on again.
3. Set the unit Test mode (by pressing the [0] key simultaneously with the ENT key for approx. 4 seconds).
4. Perform a demonstration of elevating movements. (Press the [7] key, [ENT] key and [ENT] in sequence, and the Carriage Base will slowly move up and down repeatedly.)
5. Turn VR401 to set the pulse width at pin 2 (MMOUT) of CN402 in the VMDB unit to 13 μsec $\pm$ 0.3 μsec.



6. When the adjustment is completed, press the [ESC] key. (The Carriage Base moves to the bottom and then stops.)
7. Open the front door and set the function switch SW5 to OFF.
8. Repeat the operations in steps 2 to 4 and check that elevating movements are performed properly.

Caution : The Carriage Base and Weight move up and down at a high speed.

9. Press the [ESC] key to stop the Carriage block.
10. Turn off the power to terminate the adjustment.

8.2 DR-D4XI, DR-D134X(READER DRIVE)

● Adjustment Items/Verification Items and Order

If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in steps 1 − 3, the pickup block may be defective.

Step	Item	Test Point	Adjustment Location
1	Focus offset verification	FCS. ERR	None
2	Tracking error balance verification	TRK. ERR	None
3	RF level adjustment (RF level)	RF	VR201

Note : The digital servo IC (TC9405F) being used in this set has the following functions and does not provide focus offset, focus servo loop gain and tracking servo loop gain adjustments.

1. Average function
   For accurate servo control, FCS. ERR and RF average measurements are performed and the measured values are compensated through a compensation circuit.
   Thus, volume control for FCS. OFS adjustment is not provided.
2. Auto gain control function
   The gain inside the filter is automatically adjusted to obtain a proper gain in the servo loop. This function permits the optimum gain to be obtained on each disc.
   Thus, volume controls for FCS. GAIN and TRK. GAIN adjustments are not provided.
   The gain adjustment is done before TOC reading.

● **Abbreviation table**

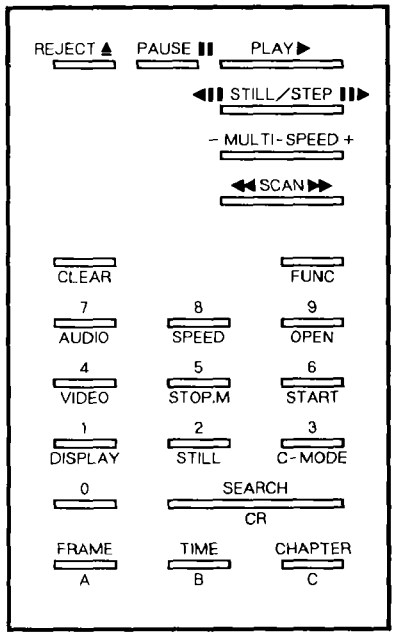
FCS. ERR :Focus Error
TRK. ERR :Tracking Error
FCS GAN :Focus Gain
TRK GAN :Tracking Gain
FCS. IN :Focus In
TRK. IN :Tracking In

● Measuring Instruments and Tools

1. Dual trace oscilloscope (10:1 probe)
2. Test disc (YEDS-7)
3. Standard tools

8.2.1 Function Table of The Remote Controller (RU-V101) for Service

Shows the function table of the remote controller (RU-V101) for service as follows. When operating the CD-ROM directly, it is possible to operate as shown below by connecting the wired-remote control to the CD-ROM with the interface.



RU-V101

REJECT		: Spindle stop
PAUSE		: Pause
PLAY		: Play
STILL/STEP	❚❚▶	:] Test command
STILL/STEP	◀❚❚	:]
MULTI-SPEED+		:] Test command
MULTI-SPEED −		:]
SCAN	▶▶	: Scan FWD
SCAN	◀◀	: Scan REV
CLEAR		: Clear
FRAME		: Frame set
TIME		: Time set
CHAPTER		: Track set
SEARCH		: Search
10key		: Numerical input
DISPLAY	(FUNC+1)	: No entry
STILL	(FUNC+2)	: No entry
C-MODE	(FUNC+3)	: No entry
VIDEO	(FUNC+4)	: No entry
STOP.M	(FUNC+5)	: Stop marker
START	(FUNC+6)	: Start
AUDIO	(FUNC+7)	: No entry
SPEED	(FUNC+8)	: No entry
OPEN	(FUNC+9)	: Door open

- **Test command**

Key operation	Command	Description
[0]+[TIME]	{0TM}	All servo OFF
[1]+[TIME]	{1TM}	Laser-diode(LD)ON
[2]+[TIME]	{2TM}	Focus ON
[3]+[TIME]	{3TM}	Spindle ON
[4]+[TIME]	{4TM}	Slider/Tracking ON/OFF
[5]+[TIME]	{5TM}	Not used
[6]+[TIME]	{6TM}	Lens UP/DOWN (Twice)
[7]+[TIME]	{7TM}	Spindle UP/DOWN (30 sec.)
[8]+[TIME]	{8TM}	Spindle rotation frequency : Normal speed
[9]+[TIME]	{9TM}	Spindle rotation frequency : Fourfold speed
[STILL/STEP>>]	{SF}	1 Track jump : FWD
[STILL/STEP<<]	{SR}	1 Track jump : REV
[*]+[*]+[*]+[MULTI-SPEED+]	{ * * * MF}	* * * Track jump : FWD
[*]+[*]+[*]+[MULTI-SPEED −]	{ * * * MR}	* * * Track jump : REV

- **Test mode**

When the test command is used, Pin 1 of S503 on the RIFB unit to ON. (Refer to Fig. 1)

- **Schematic Diagram of the Conversion Jig for Remote Control Operation and Adjustment Point**

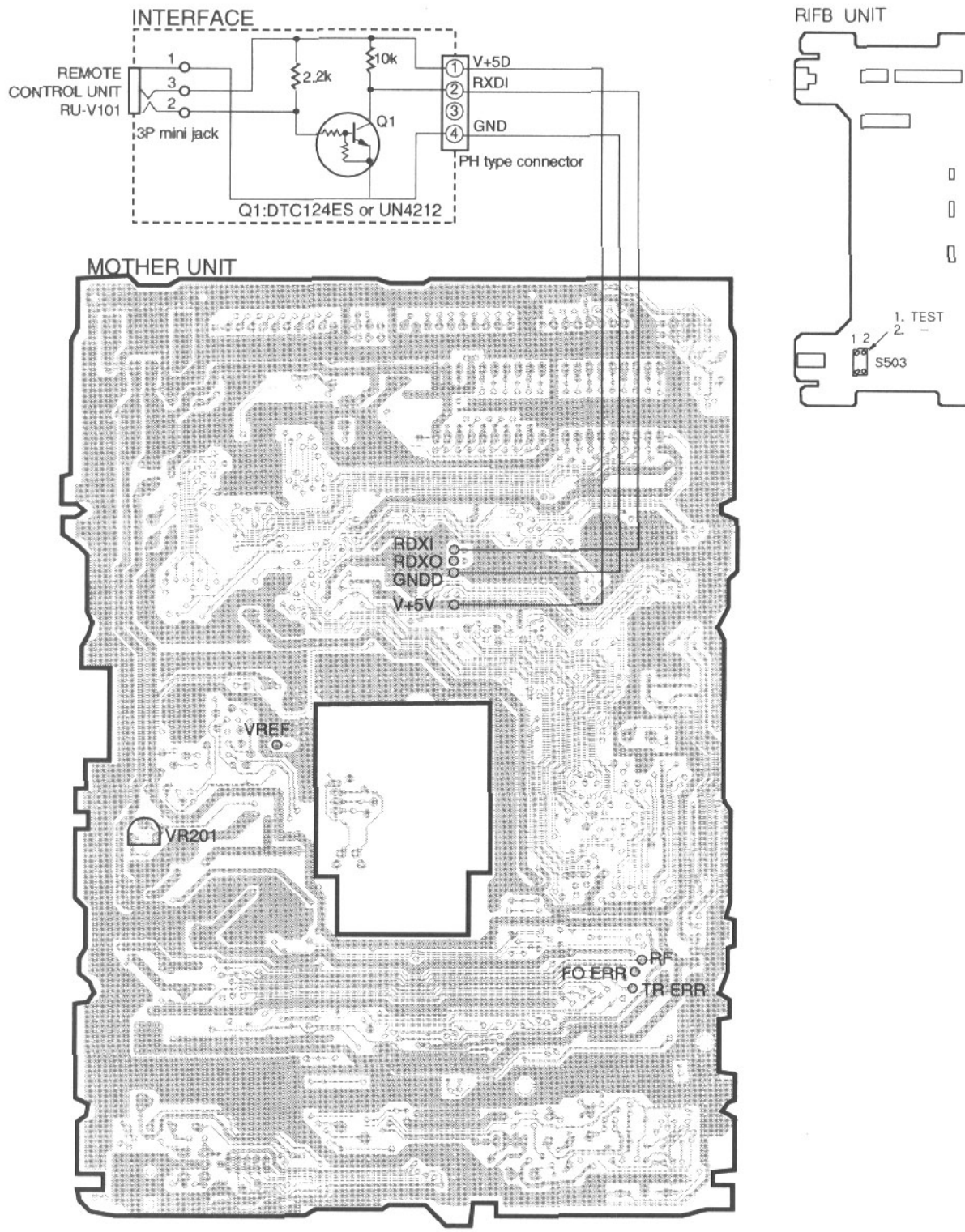


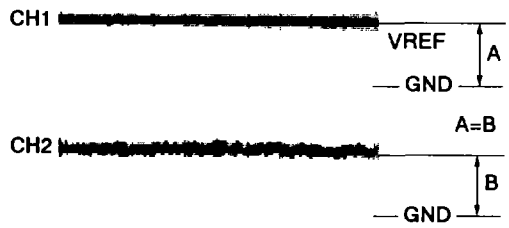
Fig. 1

1. Focus Offset Verification

● Objective ● Symptom when out of adjustment	Verify the DC offset for the focus error amp. The model does not focus in and the RF signal is dirty.		
● Measurement instrument connections	Connect the oscilloscope to VREF (CH1), FCS. ERR (CH2). Refer to Fig. 1. [Settings] 1 V/division 10 ms/division DC mode	● Player state ● Adjustment location ● Disc	Focus and spindle servos closed None YEDS-7

[Procedure]

1. Perform the automatic adjustment (offset, balance and gain) at the player is playbacked by pressing the PLAY key.
2. Close the focus servo.
3. Verify the focus error voltage at closed is the same voltage (A=B) as the VREF voltage.



Note : If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in adjustment items 1 – 3, the pickup block may be defective.

2. Tracking Error Balance Verification

● Objective ● Symptom when out of adjustment	To verify that there is no variation in the sensitivity of the tracking photo diode. Play does not start or track search is impossible.		
● Measurement instrument connections	Connect the oscilloscope to TRK. ERR. (This connection may be via a low pass filter.) [Settings] 50 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, focus and spindle servos closed and tracking servo open None YEDS-7

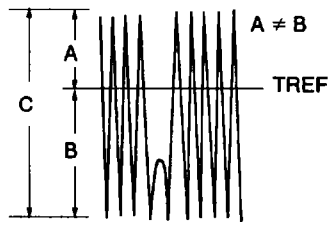
[Procedure]

1. Move the pickup to midway across the disc (R=35 mm) with the SCAN FWD ▷▷ or REV ◁◁ key.
2. Press the [1] + [TIME] key, the [2] + [TIME] key, then the [3] + [TIME] key in that order to close the focus servo then the spindle servo.
3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
4. Supposing that the positive amplitude of the tracking error signal at TRK ERR is (A) and the negative amplitude is (B), the following expression is satisfied.

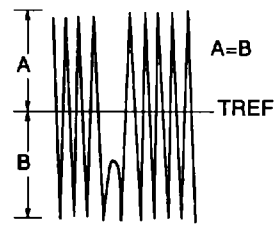
When $A \geqq B$, $\frac{A-B}{C} \times \frac{1}{2} \leqq 0.1$

When $A < B$, $\frac{B-A}{C} \times \frac{1}{2} \leqq 0.1$

* DC level of TE at stop.



When there is a DC component



When there is no DC component

3. RF Level Adjustment

● Objective ● Symptom when out of adjustment	To optimize the playback RF signal amplitude No play or no search		
● Measurement instrument connections	Connect the oscilloscope to RF. [Settings] 50 mV/division 10 ms/division AC mode	● Player state ● Adjustment location ● Disc	Test mode, play VR201 (Laser Power) YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R=35 mm) with the SCAN FWD ▷▷ or REV ◁◁ key, then press the [1] + [TIME] key, the [2] + [TIME] key, the [3] + [TIME] key, then the [4] + [TIME] key in that order to close the respective servos and put the player into play mode.
2. Adjust VR201 (Laser Power) so that the RF signal amplitude is 1.8 Vp-p ± 0.1 V.

8.3 DR-R4XI (WRITER DRIVE)

• Adjustment and Check Items

Perform the adjustment of this model in the order as shown below.

1. For the focus offset temperature compensation value adjustment
2. VCO free-run frequency adjustment
3. Slider speed control offset adjustment
4. Playback power adjustment
5. Recording power adjustment
6. Focus offset adjustment
7. Main and Sub mix ratio adjustment
8. Tracking amp. gain adjustment
9. Tracking offset adjustment
10. Fine focus offset adjustment
11. Focus servo loop gain adjustment
12. Tracking servo loop gain adjustment
13. WBL offset adjustment

• Measuring Equipment

1. Dual trace oscilloscope (10:1 probe)
2. Laser power meter
3. Test disc (YEDS-7)
4. CDR disc with recorded
   (Type No. CD-R63, manufactured by TDK.)
5. Low-pass filter (39k Ω +1000pF)
6. Hight-pass filter (3.9k Ω +180pF)
7. Signal generator
8. Frequency counter (measurable over 10MHz)
9. Hexagonal screwdriver (1.5mm diagonal)
10. Other general tools

• Adjustment Points and Their Names

VR1 : WBL offset (WBL. OFS)
VR2 : Tracking amp gain (TE. GAIN)
VR3 : Main and Sub mix ratio (MS. MIX)
VR4 : Tracking offset (TE. OFS)
VR5 : Playback power (PB. PW)
VR6 : Focus offset (FE. OFS)
VR101 : Slider speed control offset (SLD. OFS)
VR104 : Recording power (REC. PW)
VR601 : Focus servo loop gain (FCS. GAIN)
VR602 : Tracking servo loop gain (TRK. GAIN)
L603 : VCO adjustment (VCO ADJ)
VR105 : Focus offset temperature compensation value (FEOT)

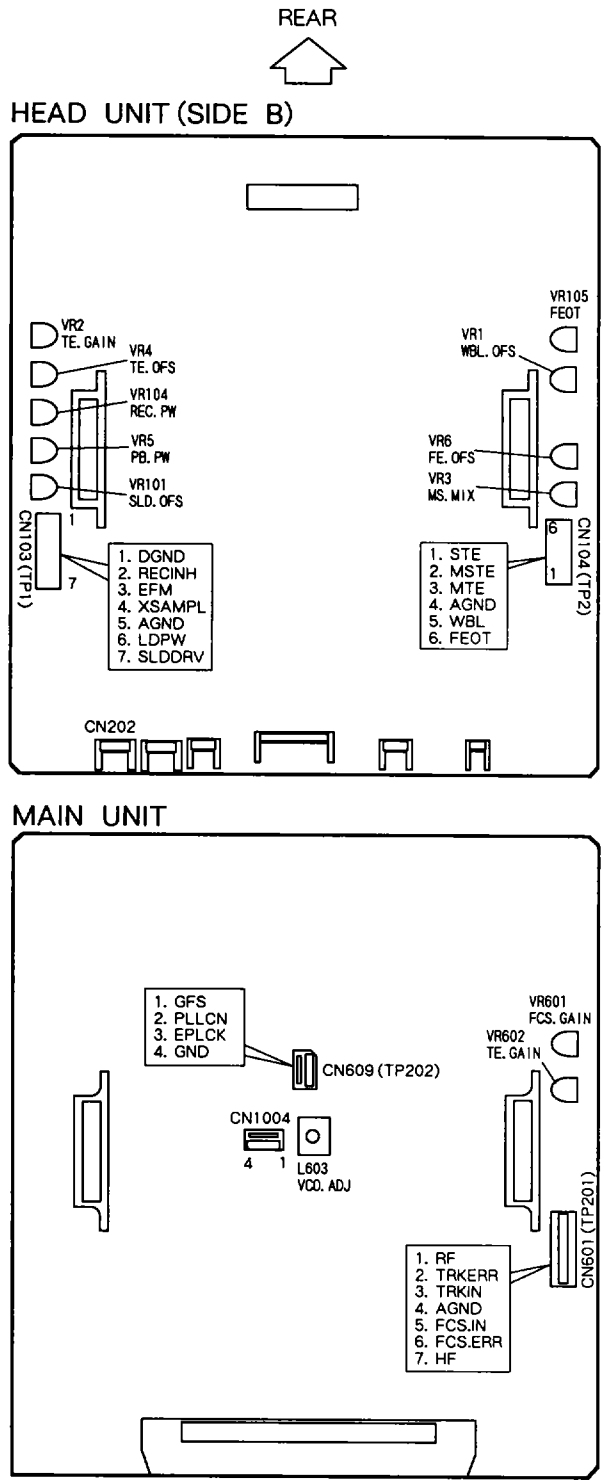


Fig.1 Adjustment Point

8.3.1 Function Table of the Remote Controller (RU-V101) for Service

• Test mode

Shows the function table of the remote controller (RU-V101) for service as follows. When operating the CD-ROM writer directly, it is possible to operate as shown below by connecting the wired-remote control to the CD-ROM writer with the interface.

• Schematic Diagram of the Conversion Jig for Remote Control Operation

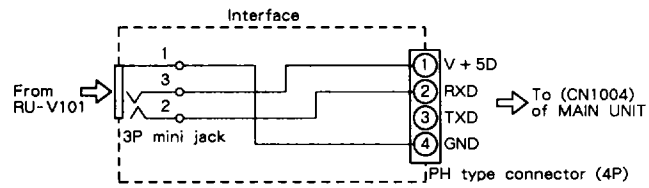


Fig. 2

8.3.2 How to Control the Remote Control Unit

Importance : When perfoming the adjustment, be sure to turn the power on after set to SW5 to ON, SW6 to OFF and SCSI ID to 7 (pins 1 to 4 of CN202 on HEAD unit are all shorted. at this time, operation can not performed from the Host.

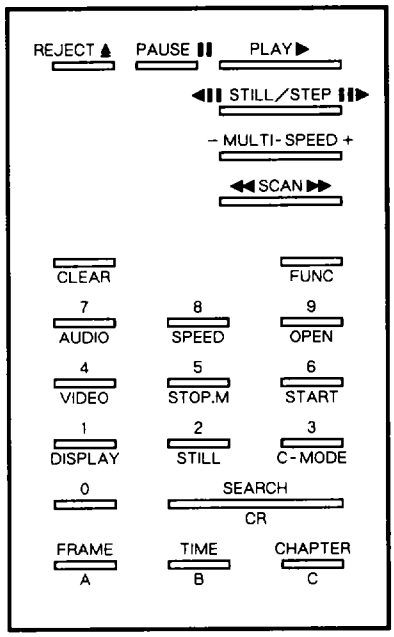


Fig. 3 RU-V101

• Test command

key operation	Description
[REJECT]	STOP
[0]+[TIME]	All servo OFF
[1]+[TIME]	Laser diode (LD) ON
[2]+[TIME]	Focus ON
[3]+[TIME]	Spindle ON/tracking OFF
[4]+[TIME]	Tracking ON
[5]+[TIME]	MAX power ON entry
[6]+[TIME]	MAX power ON
[7]+[TIME]	Spindle rotation frequency : Normal speed
[8]+[TIME]	Spindle rotation frequency : Twofold speed
[9]+[TIME]	Spindle rotation frequency : Fourfold speed
[3]+[9]+[CHAPTER]	Read out area Recording
[4]+[0]+[CHAPTER]	Read in (TOC) area Recording
[3]+[4]+[CHAPTER]	TOC read
[4]+[2]+[CHAPTER]	Power calibration
[3]+[7]+[CHAPTER]	REC pause
[2]+[1]+[CHAPTER]	REC start
[4]+[1]+[CHAPTER]	PMA record
[5]+[3]+[CHAPTER]	Calibration power ON
[3]+[1]+[CHAPTER]	Tray open
[3]+[2]+[CHAPTER]	Tray close
[0]+[9]+[CHAPTER]	1Track jump : FWD
[1]+[0]+[CHAPTER]	1Track jump : RWD
[1]+[1]+[CHAPTER]	10Track jump : FWD
[1]+[2]+[CHAPTER]	10Track jump : RWD
[1]+[3]+[CHAPTER]	96Track jump : FWD
[1]+[4]+[CHAPTER]	96Track jump : RWD
[MIN]+[SEC]+[FRM]+[SEARCH]	TIME search
[TRACK NUMBER]+[FUNC]+[0]	Track number search

Caution :

- •When replacing the disc, perform the TOC read. (However, does not perform the TOC read in the adjustment.)
- •Perform the power calibration before first recording after the disc is replaced.
- •Perform the PMA record after the recording.
- •Perform the STOP when changing the spindle rotation frequency.
- •Perform the power calibration before first recording after the spindle rotation frequency is changed.
- •When finalizing the disc, be sure to perform the read out area recording and the read in area recording in order.

8.3.3 Adjustments

Note : The adjustment values in Adjustments 1 and 2 will drift depending on temperature. Perform the adjustments in an ambient temperature range from 10 to 30 °C within 1 minute after the power is turned on.

1. Temperature compensation value adjustment for the focus offset

● Objective	To adjust the reference potential in the temperature compensation circuit to enable proper temperature compensation for the direct-current offset voltage in the focus servo circuit.		
● Symptom when out of adjustment	No focused at high and low temperatures, and sound is intermittently broken.		
● Measurement instrument connections	Connect an oscilloscope to TP2 (CN104), Pin 6 (FEOT). [Settings] 5 mV/div. 5 msec/div. DC mode	● Player state ● Adjustment location ● Disc	Stop VR105 (FEOT) None needed

[Procedure]

1. Adjust VR105 (FEOT) and set the direct-current voltage at TP2(CN104), pin 6(FEOT) to − 65 ± 5mV.

Note : Adjustment using a tester is recommended. As this adjustment will drift depending on temperature immediately after the power is turned on, perform the adjustment as promptly as possible (within 1 minute).

2. VCO Free-run Frequency Adjustment

● Objective	To optimize the VCO free-run frequency.		
● Symptom when out of adjustment	No play.		
● Measurement instrument connections	Connect the frequency counter and TP202 (CN609), Pin 3 (EPLCK)	● Player state ● Adjustment location ● Disc	Stop (just the power switch ON) L603 (VCO. ADJ) None needed

[Procedure]

1. Adjust L603 so that the VCO oscillation frequency at TP202 (CN609), pin 3 (EPLCK) is 4.322MHz ± 0.00.2MHz.

3. Slider Speed Control Offset Adjustment

● Objective	To optimize the DC offset voltage of the slider speed control amp.		
● Symptom when out of adjustment	Player does not playback (slider moves at stop).		
● Measurement instrument connections	Connect the oscilloscope to TP1(CN103), Pin 7 (SLDDRV). GND : TP1 (CN103), Pin 5 (AGND) [This connection may be via a low-pass filter (39k Ω +1000pF)] [Settings] 5 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Stop VR101 (SLD. OFS) None needed

[Procedure]

1. Move the pickup to midway across the disc.
2. If the pickup continues moving even when you try to stop it, coarse adjust VR101 (SLD.OFS) to stop it.
3. Adjust VR101 (SLD.OFS) so that the DC voltage at TP1 (CN103), pin 7 (SLDDRV) is 0 ± 10 mV.
4. Check that pickup movement is stopped.

4. Playback Power Adjustment

● Objective	To optimize the playback power of the laser diode.		
● Symptom when out of adjustment	Play does not start, track search is impossible, track are skipped.		
● Measurement instrument connections	Shine the light dischrged from the objective lens on the light power meter sensor. [Settings] Wavelength 790nm Average mode	● Player state ● Adjustment location ● Disc	Laser diode (LD) ON VR5 (PB. PW) None needed

[Procedure]

1. Move the pickup to the position where shineable the light discharged from the objective lens on the light power meter sensor.
2. Lights up the playback laser diode by laser diode (LD) ON.
3. Shine the light discharged from the objective lens in the pickup on the light power meter sensor. Adjust VR5 (PB.PW) so that the playback laser diode output is an average 0.68 mW ± 0.02 mW.

5. Recording Power Adjustment

● Objective	To optimize the recording power of the laser diode.		
● Symptom when out of adjustment	The player does not record nor playback self-recorded discs. It also skips tracks and the RF waveform is dirty. (No problems during CD playback)		
● Measurement instrument connections	Shine the light discharged from the objective lens on the light power meter sensor. [Settings] Wavelength 790 nm Average mode	● Player state ● Adjustment location ● Disc	Spindle rotation frequency : Fourfold speed, max power ON entry, max power ON VR104 (REC. PW) None needed

[Procedure]

1. Fully turn VR104 (REC.PW) counterclockwise to reduce the power to the minimum.
2. Move the pickup to the position where shineable the light discharged from the objective lens on the light power meter sensor.
3. Spindle rotation frequency : Fourfold speed, max power ON entry and max power ON to lights up the laser diode.
4. Shine the light discharged from the objective lens in the pickup on the light power meter sensor and adjust VR104 (REC.PW) so that the playback laser diode output is an average of 10 mW ± 0.05 mW.

Notes

- Power more than ten times greater than playback power is released during these adjustments. Never look directly at the objective lens.
- The laser diode may be damaged if the recording power is greater than the specified value. Always perform step 1 before making adjustments.

6. Focus Offset Adjustment

● Objective	To coarse adjust the DC offset voltage of the focus servo circuit for perform the tracking adjustments correctly.		
● Symptom when out of adjustment	The model does not focus in, sound broken and the RF signal is dirty.		
● Measurement instrument connections	Connect the oscilloscope to TP201 (CN601), Pin 1 (RF) [Settings] 20mV/division 10 ms/division DC mode	● Player state ● Adjustment location ● Disc	Spindle rotation frequency : Normal speed, focus ON, spindle ON/ tracking OFF VR6 (FE. OFS) YEDS-7

[Procedure]

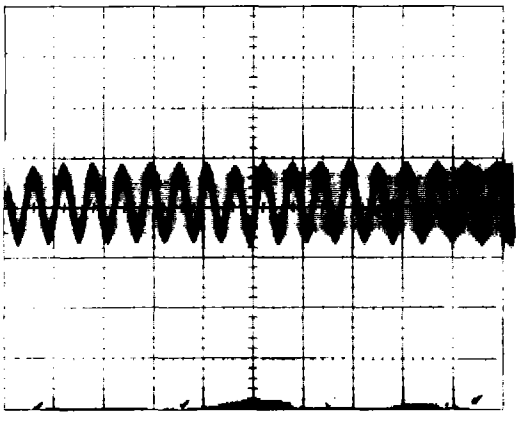
1. Move the pickup to midway across the disc (R=35mm).
2. In the normal speed, focus ON and spindle ON state, adjust VR6 (FE. OFS) so that the amplitude of TP201 (CN601), Pin 1 (RF) becomes maximam.

7. Main and Sub Mix Ratio Adjustment

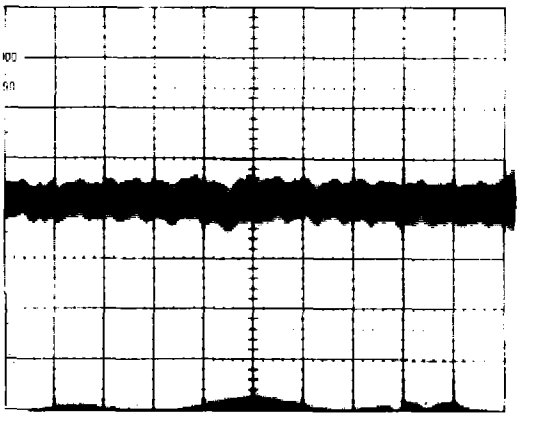
● Objective	To mix the gain of the main signal output and sub signal output of the pickup.		
● Symptom when out of adjustment	Player does not playback.		
● Measurement instrument connections	Connect the oscilloscope to CH1 : TP2 (CN104), Pin 1 (STE) CH2 : TP2 (CN104), Pin 2 (MSTE). [This connection may be via a L.P.F. (39kΩ +1000pF).] [Settings] CH 1 : 5 mV/div. AC mode 1 ms/div. ADD mode CH 2 : 10 mV/div. AC mode (Match the GND level of CH1 and CH2.)	● Player state ● Adjustment location ● Disc	Spindle rotation frequency : Normal speed, focus ON, spindle ON/ tracking OFF VR3 (MS. MIX) YEDS-7

[Procedure]

1. Spindle rotation frequency : Normal speed, focus ON and spindle ON to move the pickup to midway across the disc.
2. Set the oscilloscope to ADD mode (waveform adding mode of CH1 and CH2) and observe the adding waveform of CH1 and CH2.
3. Adjust VR3 (MS. MIX) so that the amplitude of waveform becomes minimum.



Out of adjustment



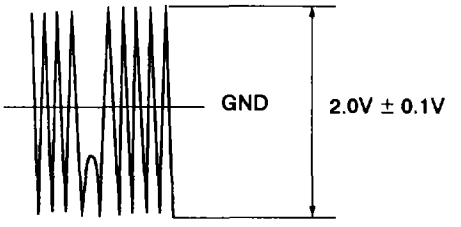
Optimum adjustment

8. Tracking Amp. Gain Adjustment

● Objective	To correct the discrepancy in the tracking error level with the pickup.		
● Symptom when out of adjustment	Player does not playback, track search is impossible, tracks are skipped.		
● Measurement instrument connections	Connect the oscilloscope to TP201 (CN601), Pin 2 (TE). [This connection may be via a low-pass filter (39kΩ +1000pF).] [Settings] 50 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Spindle rotation frequency : Normal speed, focus ON, spindle ON/ tracking OFF VR2 (TE. GAIN) YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R=35mm).
2. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
3. Set to spindle rotation frequency : Normal speed, focus ON and spindle ON.
4. Adjust VR2 (TE. GAIN) so that the positive amplitude and negative amplitude of the tracking error signal at TP201 (CN601), Pin 2 (TE) is 2.0V ± 0.1V.



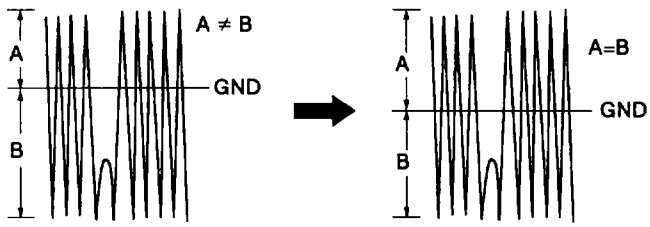
9. Tracking Offset Adjustment

● Objective	To correct for the variation in the sensitivity of the tracking photodiode.		
● Symptom when out of adjustment	Play does not start or track search is impossible.		
● Measurement instrument connections	Connect the oscilloscope to TP201 (CN601), Pin 2 (TE) [This connection may be via a low-pass filter (39kΩ +1000pF).] [Settings] 50 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Spindle rotation frequency : Normal speed, focus ON, spindle ON/ tracking OFF VR4 (TE. OFS) YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R=35mm).
2. Set to normal speed, focus ON and spindle ON.
3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
4. Adjust VR4 (TE. OFS) so that the positive amplitude and negative amplitude of the tracking error signal at TP201 (CN601), Pin 2 (TE) are the same (in other words, so that there is no DC component).

Note : Perform the run-on adjustment in the section 7 and 8.



When there is a DC component

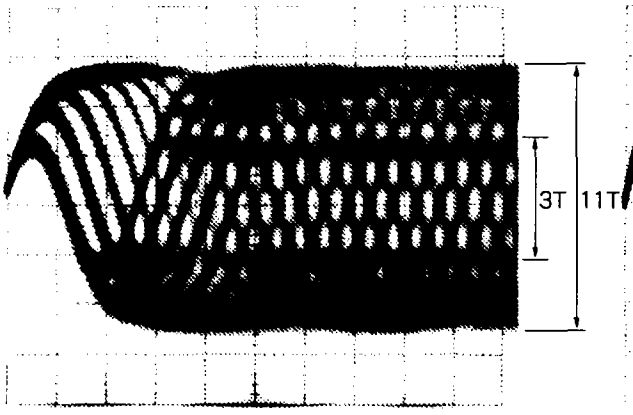
When there is no DC component

10. Fine Focus Offset Adjustment

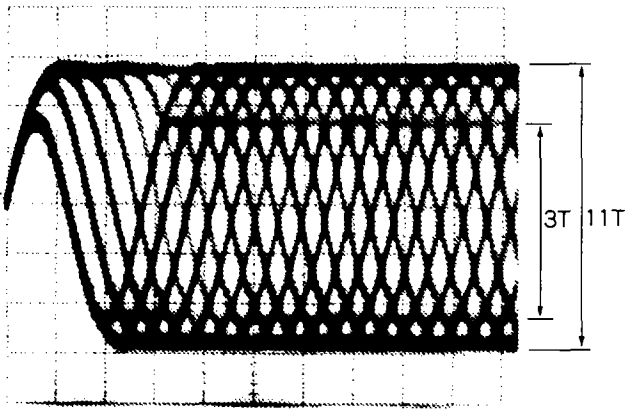
● Objective	To optimize the DC offset voltage of the focus servo circuit.		
● Symptom when out of adjustment	The player does not focus in, sound broken and the RF signal is dirty. A disc which has been recorded on the same unit cannot be reproduced.		
● Measurement instrument connections	Connect the oscilloscope to TP201 (CN601), Pin 1 (RF). [Settings] 20 mV/division 500 ns/division AC mode	● Player state ● Adjustment location ● Disc	Spindle rotation frequency : Normal speed, focus ON, spindle ON, tracking ON VR6 (FE. OFS) Recorded CD-R disc (TDK CD-R63 specified)

[Procedure]

1. Move the pickup to midway across the disc (R=35mm). Spindle rotation frequency : Normal speed, focus ON, spindle ON and tracking ON put the player into play mode.
2. Adjust VR6 (FE. OFS) and maximize the amplitude of 3T at TP201 (CN601), pin 1 (RF).



Out of adjustment



Optimum adjustment

11. Focus Servo Loop Gain Adjustment

● Objective	To optimize the focus servo loop gain.		
● Symptom when out of adjustment	Playback does not start or focus actuator noisy.		
● Measurement instrument connections	See Fig. 8 [Settings] CH 1 : 0.1 V/division X-Y mode CH 2 :20 mV/division	● Player state ● Adjustment location ● Disc	Spindle rotation frequency : Normal speed, focus ON, spindle ON, tracking ON VR601 (FCS. GAIN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.44kHz and 2Vp-p.
2. Move the pickup to midway across the disc (R=35mm). Spindle rotation frequency : Normal speed, focus ON, spindle ON and tracking ON put the player into play mode.
3. Adjust VR601 (FCS. GAIN) so that the lissajous waveform is symmetrical about the X axis and the Y axis.

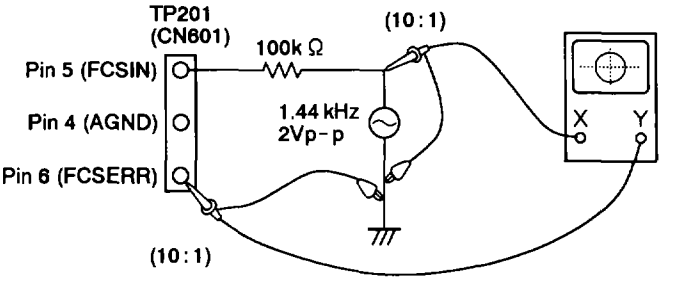
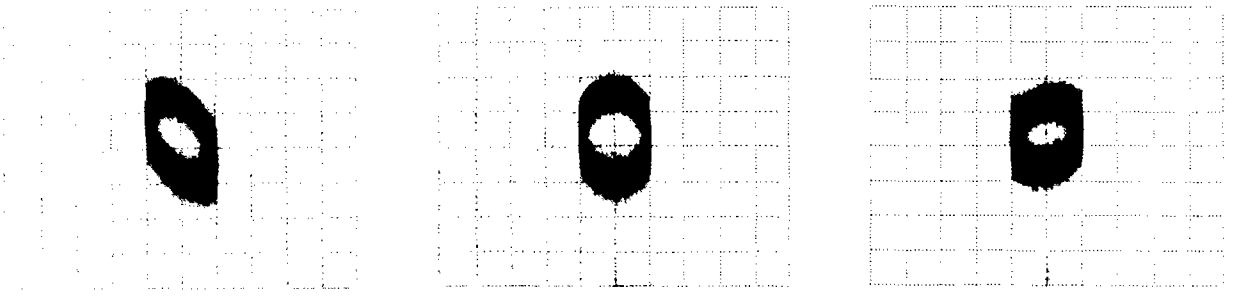


Fig. 8



Higher gain | Optimum gain | Lower gain

12. Tracking Servo Loop Gain Adjustment

● Objective	To optimize the tracking servo loop gain.		
● Symptom when out of adjustment	Playback does not start, during searches the actuator is noisy, or tracks are skipped.		
● Measurement instrument connections	See Fig. 9. [Settings] CH 1 : 0.1 V/division X-Y mode CH 2 :10 mV/division	● Player state ● Adjustment location ● Disc	Spindle rotation frequency : Normal speed, focus ON, spindle ON, tracking ON VR602 (TRK. GAIN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.54kHz and 2Vp-p.
2. Move the pickup to midway across the disc (R=35mm). Spindle rotation frequency : Normal speed, focus ON, spindle ON and tracking ON put the player into play mode.
3. Adjust VR602 (TRK. GAIN) so that the lissajous waveform is symmetrical about the X axis and the Y axis.

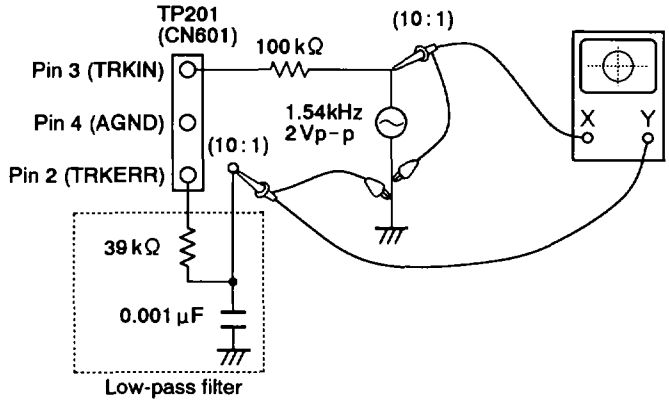
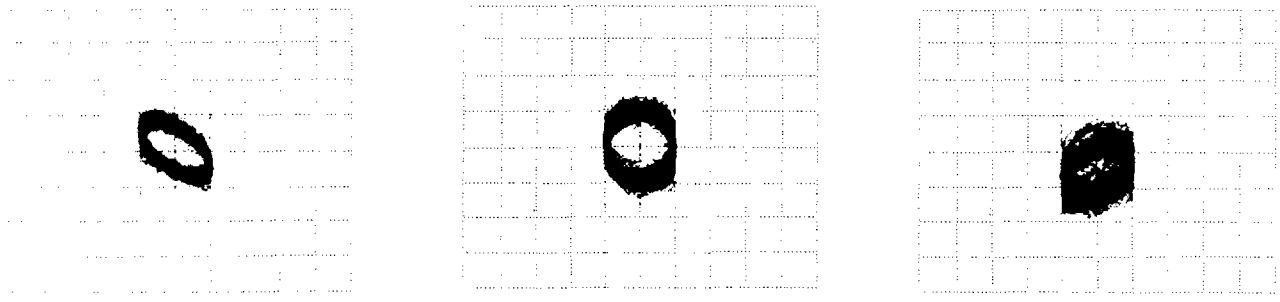


Fig. 9



Higher gain | Optimum gain | Lower gain

13. WBL Offset Adjustment

● Objective	To optimize the DC offset voltage of the wobble amp.		
● Symptom when out of adjustment	CD-R disc does not record and playback.		
● Measurement instrument connections	Connect the oscilloscope to TP2 (CN104), Pin 5 (WBL). [This connection may be via a high-pass filter (180pF+39.0kΩ).] [Settings] 100 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Spindle rotation frequency : Normal speed, focus ON, spindle ON, tracking ON VR1 (WBL. OFS) CDR disc with recorded (Type No. CD-R63, manufactured by TDK.)

[Procedure]

1. Move the pickup to the midway across the disc.
2. Set to the normal speed, focus ON, spindle ON and tracking ON state.
3. Adjust VR1 (WBL. OFS) so that the amplitude of the waveform becomes minimum.

Note : If oscillation occurs and the adjustment cannot be correctly performed with the above method.
1. Perform a TOC read operation [(3), (4), (CHAPTER)].
2. Adjust by searching for and playing a section around the middle area.

9. DISASSEMBLY

9.1 FOR YOUR SAFETY

The Carriage Base of this unit moves an extremely high speed (almost twice that of the conventional changers). Sufficient care must be taken so that fingers will not be caught when servicing it. The right and left Weight Assys also move at a high speed in synchronization with up/down movements of the Carriage Base, and you must also be careful to avoid your fingers being caught. Be also careful so that you do not cut your hand or fingers on the burrs of metal plates, such as the Chassis.

9.2 PRECAUTIONS FOR SERVING

(1) Door Switch

For safety, a circuit shuts down the power to the drive circuits for the Carriage Base VD Motor and the Loading Motor when the door of this units is open (the door switch is not pressed). To forcibly turn on the power with the door open when serving, press the portion indicated in the figure 1 (*). The door switch is turned on.
In such a case, sufficient care must be taken so that fingers will not be caught the Carriage Base or the Weight Assys.

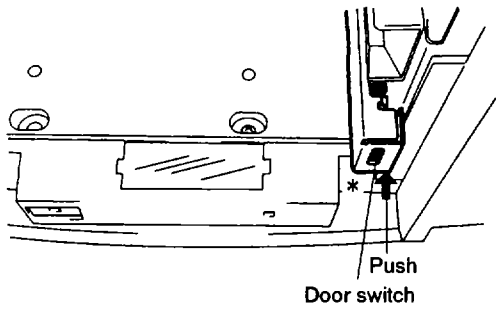


Fig.1

(2)Disc Sensor of the Carriage Base

The Carriage Base of this unit detects discs optically. Therefore, it may become impossible for it to detect discs if any strong light hits on the Carriage Base from the top when you remove the bonnet for repairs.

(3)Tray Selector at the bottom of the Tray in the Mail Slot

The portion indicated in Tray Selector in the figure 2 is a part that allows you to use the Mail Slot mechanism for other purposes (such as for vertical installation).
Set the Tray Selector to the left position to use the unit as a 100-disc changer. If the Tray Selector is set to the right position., the disc holders (the right and left portions in the inside end of the tray) will not open even in tray-open status. Thus, normally have the Tray Selector in the left position.

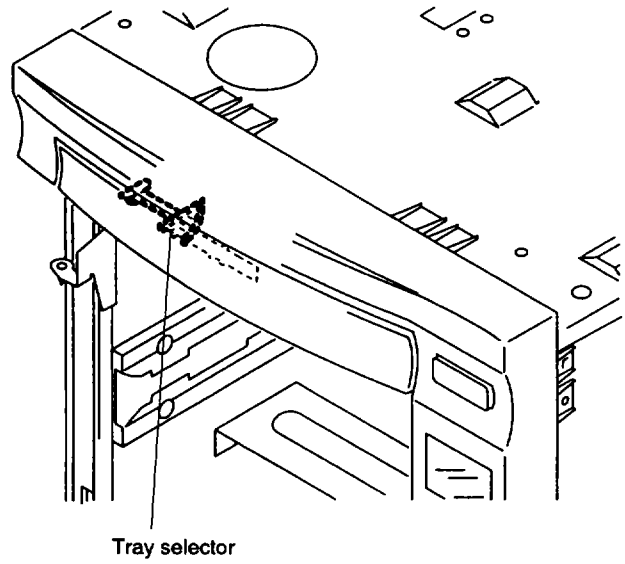


Fig.2

(4)Connector of the Reader Drive Unit

As the Reader Drive Unit uses boards in common with the CORE of the base model, CN706 on the MOTHER Unit of the Reader Drive Unit functions as a post.
Although the Connector Assy for this position can be inserted even upside-down or backward, note that it must be inserted, as shown in the figure 3, with the white wire up and to the left.

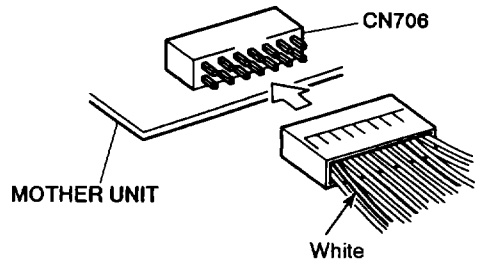


Fig.3

Note : If you have removed the cord clamper (or locking wire saddle) that holds the wires of the Servo Mechanism assy in the Reader Drive, be sure to resume the original arrangement before use. If wires are unbraided or not firmly locked, discs may be damaged.

(5)When forcibly Opening the Front Door

To eliminate the cause of an error, etc., the front door can be forcibly opened in either of the following ways.

1. Remove the right side panel and manually release the door lock (Pull the Link Plate Assy up).
2. Unlock the key switch and turn the power on while pressing the door key. The door immediately opens without any initializing operation.
3. While the error indication is being displayed, set the key switch to the UNLOCKED position and press and hold the door key. The door immediately opens without any initilizing operation.

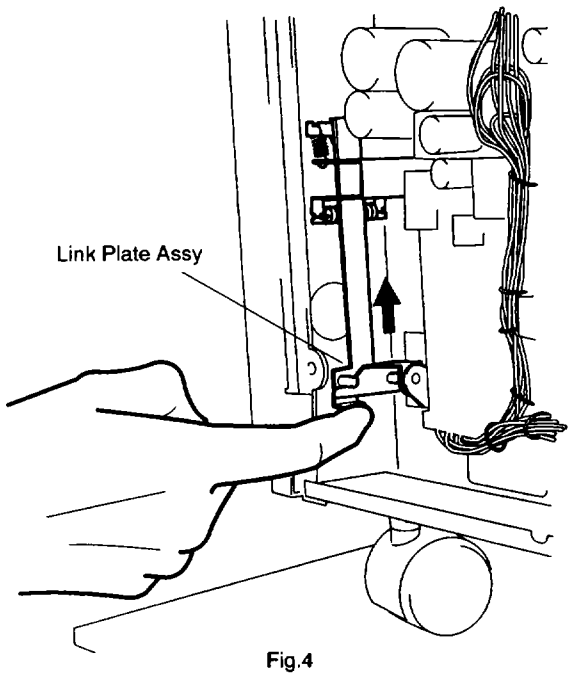


Fig.4

(6)On electrostatic destruction

If you must directly touch a board to repair the unit or to install an additional drive, sufficient care must be taken to avoid touching the Pickup or ICs, which can be destroyed by electrostatics.

9.3 REMOVE THE DOOR (Fig.5)

(1)When the Door must be removed without the power on

1. Remove the four screws to detach the Side Panel L.
2. Remove the four screws to detach the Side Panel R.
3. Remove the six screws to detach the Top Panel.
4. Manually push up the Link Plate Assy located near the front on the right side upward to open the door.(Fig.4)
5. Remove thscrew ① which secure the Hinge Holder.
6. Loosen the screw ② and slide the Hinge Holder downward and remove it from the shaft.
7. While tilting the entire door to the outside, pull it up to detach it from the lower shaft.

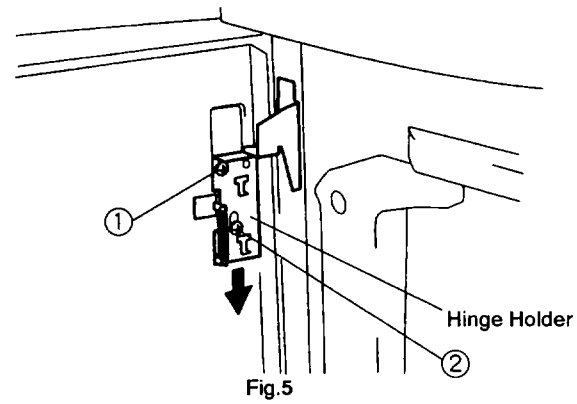


Fig.5

(2)With the Power On

1. Turn the front key to the UNLOCK position.
2. While pressing the DOOR OPEN key, turn the power on so that the door opens.
3. Proceed same as in steps 5 to 7 of (1) above.

9.4 REMOVE THE FRONT PANEL

1. Remove the door (see "9.3 Remove the Door").
2. Pull out the upper magazine
3. Turn the gear of Mail Slot by hand to move the tray out to the front
4. Insert your fingers through the hole on the rear and release the right and left hooks of the Tray Vessel to remove it.
5. Turn the gear of Mail Slot by hand to return the tray to the inside
6. Remove the ten screws which secure the front panel (six from the front, two from the top, from the right side).
7. Remove the four hooks which secure the front panel (two from the top, two from the right side) and pull out the connector assy while eliminating the door hinge assy, to detach the front panel.

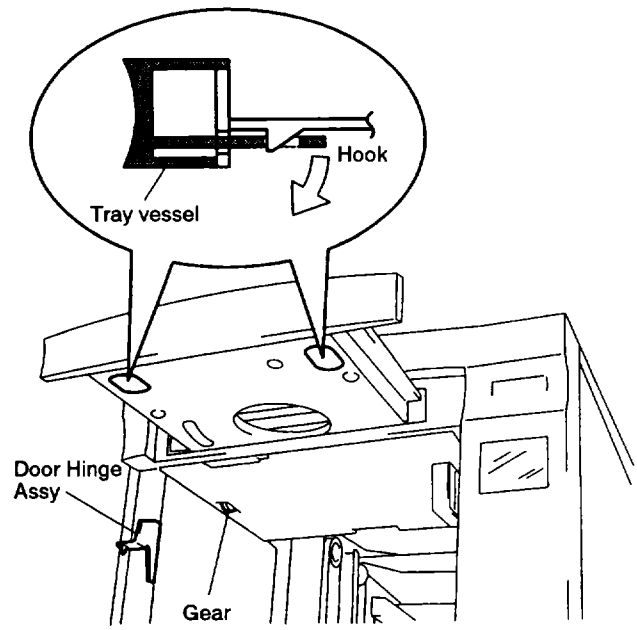


Fig.6

9.5 MANUALLY MOVING THE CARRIAGE BASE UP AND DOWN

1. Open the front door.
2. Pull out the magazines.
3. Remove the panel cover (black sheet).
4. Rotate the pulley by hand.
   (Clockwise to move the Carriage Base down)
   (Counterclockwise to move the Carriage Base up)

Caution : Note that the motor starts rotating and may injure you if the door switch is set to ON while power is being supplied.

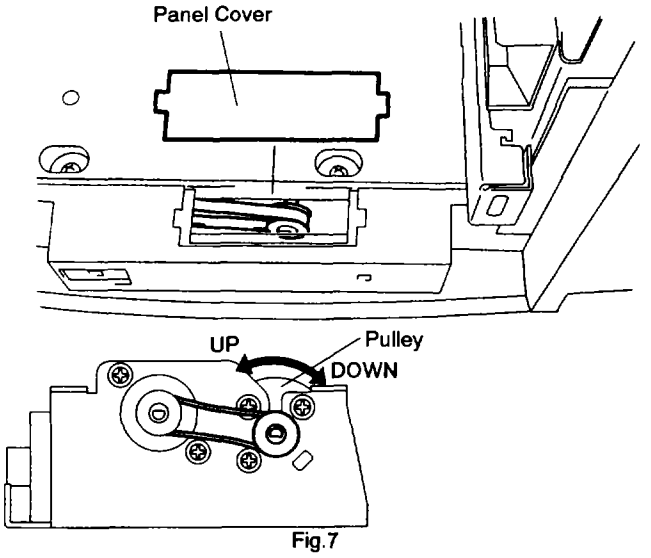


Fig.7

9.6 REMOVE THE VD MOTOR FIXING PLATE (Fig.8 and 9)

1. Remove the five screws, then the Under Cover.
   (When attaching, first secure the two front screw, with the right one first.)
   When replacing only the gear box, additionally remove the front two gear box fixing screws.
2. Pull out the two connectors (PWR2 Unit CN253, VMDB Unit CN402) on the right side and remove the springs.
3. Remove the three screws and detach the VD motor fixing plate.

Caution : When attaching, first secure the shoulder screw ① to apply tension to the belt with the spring, then secure the two set screw②.

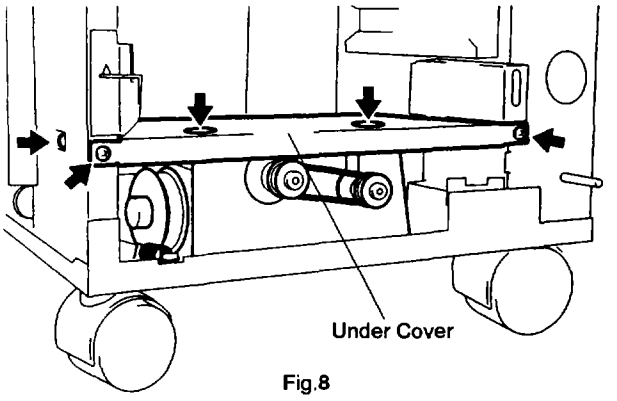


Fig.8

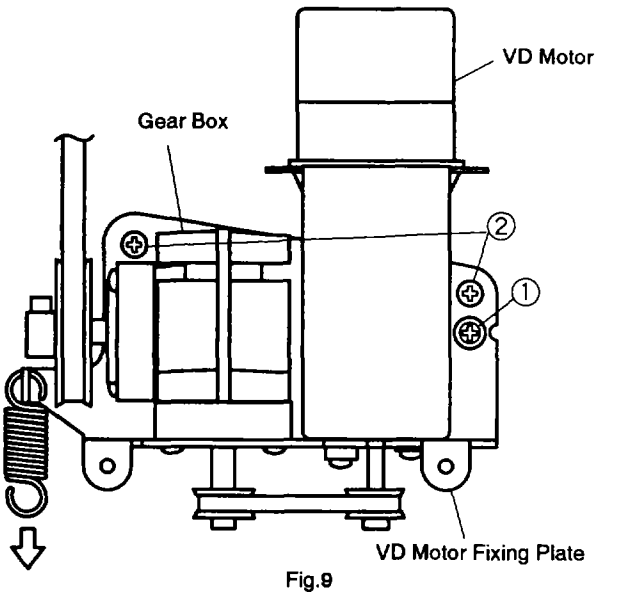


Fig.9

9.7 NOTE ON REPLACING THE VD MOTOR

The belt in the VD Motor block requires tension adjustment. When replacing the motor, secure it so that 8 mm is left inside the belt when a force of approx. 50 g is applied to the center of the belt.

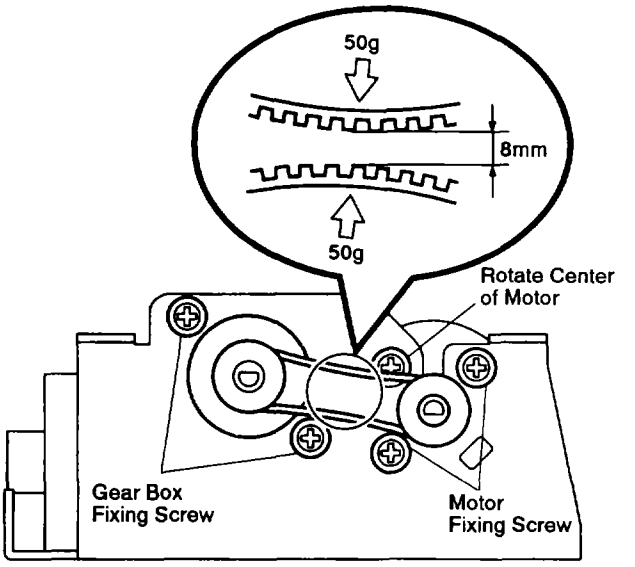
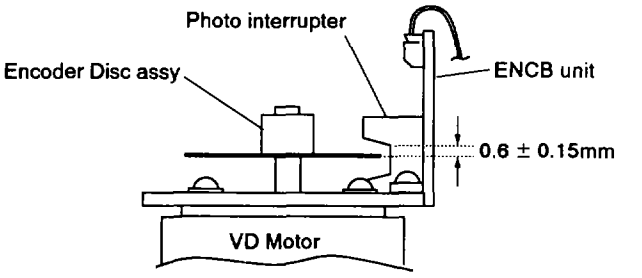


Fig.10

When you detached the encoder disc, attach it so that 0.6 ± 0.15mm is left between the upper surface of the encoder disc assy and light-receiving block of the photo interrupter.



9.7 MAINTENANCE OF THE CARRIAGE BASE

(1)Remove the Chuck Assy

1. Move the Carriage Base up to the middle of the unit's height.
2. Turn the power off.
3. Rotate the Loading Motor to slide the Chuck to the front.
4. While pushing up the Upper Plate, pull out the Chuck assy from the shaft of the epicycle arm.

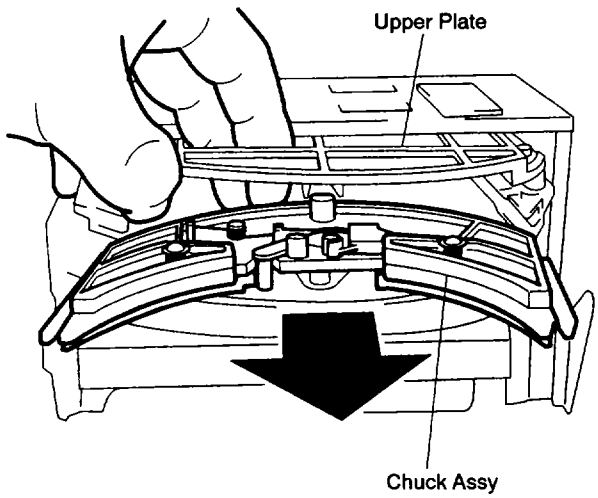


Fig.11

(2)Remove the Swing Full Assy

1. Move the Carriage Base up to the highest address.
2. Turn the power off.
3. Remove the four screws to detach the Side Panel L.
4. Remove the four screws to detach the Side Panel R.
5. Remove the six screws to detach the Top Panel.
6. Remove the set screw ① of the Sensor Stay and put it on the upper chassis.

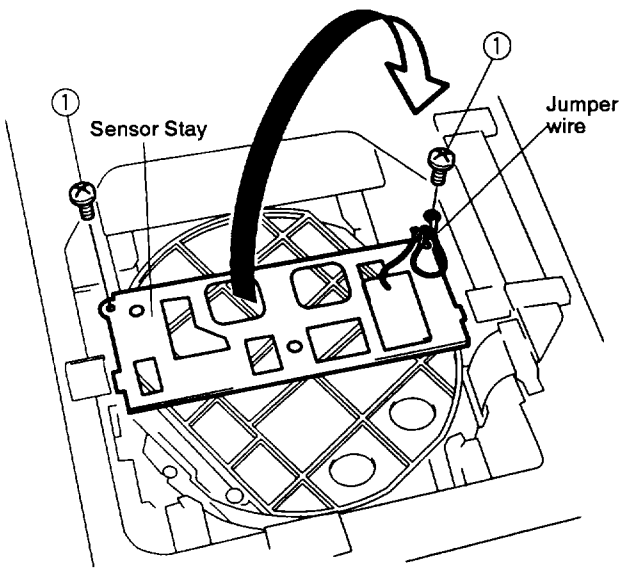


Fig.12

Caution : Be careful not to damage the connected wires and to keep the state of wire arrangements in mind.

7. Unlock the Lock Plate. (Slide the Lock Plate while pulling its edge upward.)

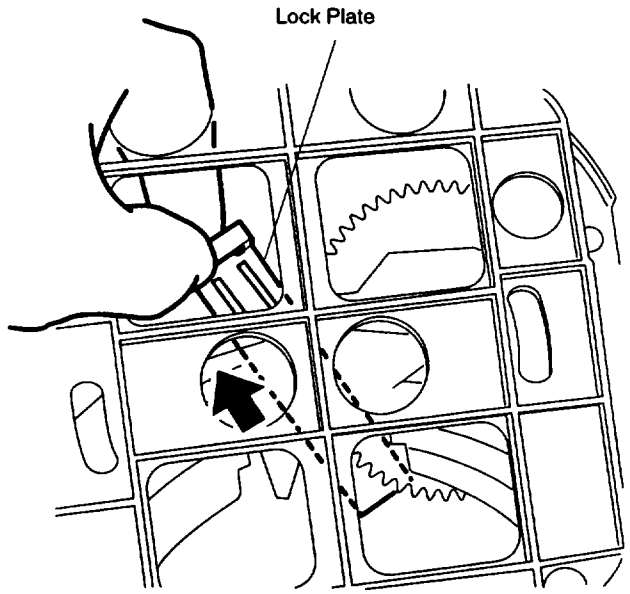


Fig.13

8. Pull the Chuck Assy and the Upper Plate straight upward, keeping the Chuck Assy stable.

Caution : Slowly pull them upward while not tilting them as far as possible without letting the steel ball. Then remove the steel ball.

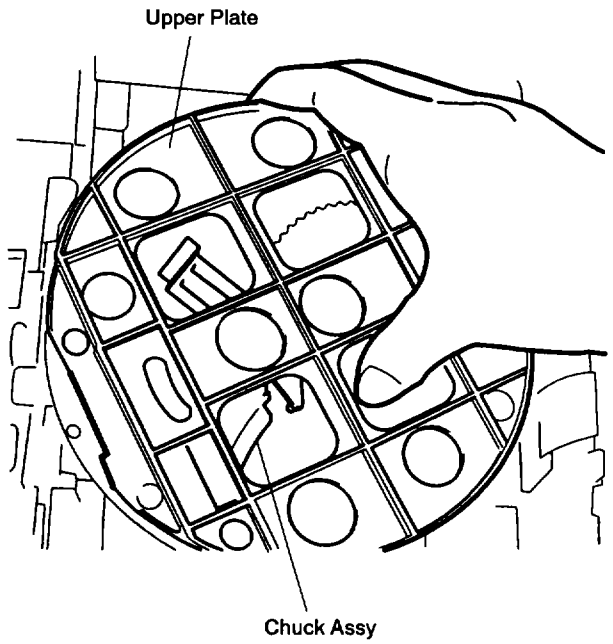


Fig.14

(3)Attaching the Inner Table Assy

1. Attach the Epicycle Arm Assy so that its top edge faces the center of the notch of the Outer Table.

Caution : Do not put the Inner Table over the brim of the Outer Table.

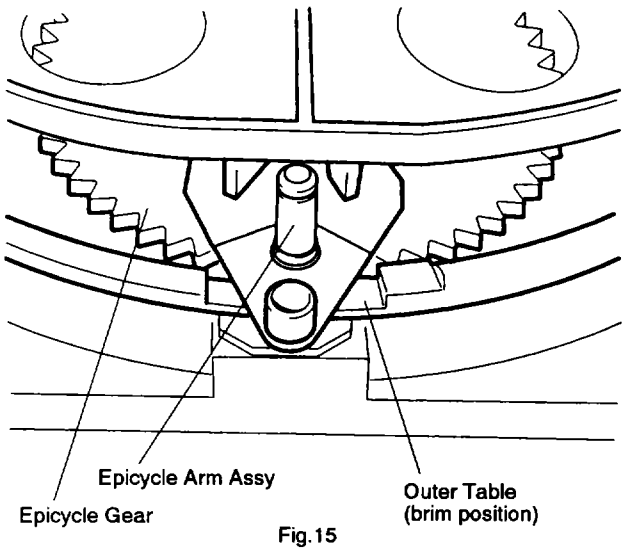


Fig.15

(4)Attaching the Swing Full Assy

1. Key-shaped block of the H cam Gear and two SW arm C on the Carriage Base with the ▲ 's marks.
2. Turn the Inner Table of the Swing Full Assy fully counterclockwise and hold maintain this status.

Caution : Hold both the Chuck Assy and Upper Plate so that they are pushed back by the force of the spring.

3. Insert the steel ball in the hole of the Outer Plate.
4. Set the Swing Full Assy so that the key-shaped hole of the Inner Plate aligns with the key-shaped axis of the H Cam Gear.

Caution : Set it while pushing the Inner Plate onto the Outer Plate so that the Inner Plate fits on the Outer Plate.

5. Lock the Lock Plate by sliding it.

Caution : Check that it has firmly locked by pulling the Swing Full Assy up.

6. Rotate the Loading Motor to once turn the Swing Full Assy counterclockwise. It lockes on the way if the Sw Arm C have not fit into the Cam Slots. In such a case, once detach the Assy and repeat the attachment procedure.
7. Arrange the wires and secure the Sensor Stay with screws.

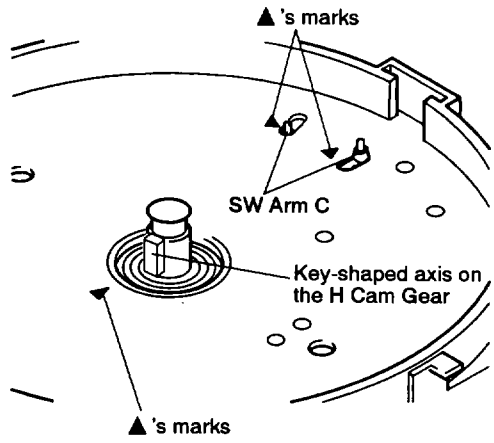


Fig.16

(5)Remove the Rear Parts

1. Turn the unit upside-down.
2. Remove the four screws of the Bottom Plate.
3. Detach the parts as necessary.

Caution : Leave the Swing Full Assy detached when replacing the H Cam Gear.

(6)Attaching the SW Arms

1. Attach the SW arms as shown in Fig. 17.

Caution : There are three sets of SW Arm A, B and C which can be recognized by the respective markings.

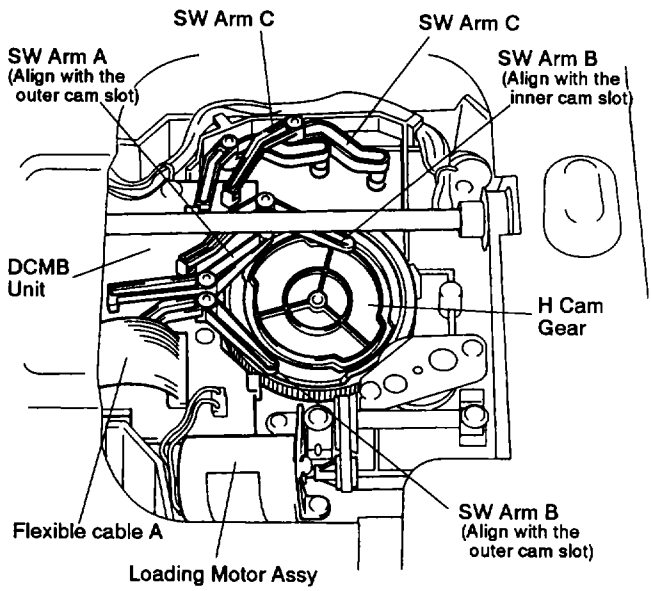


Fig.17

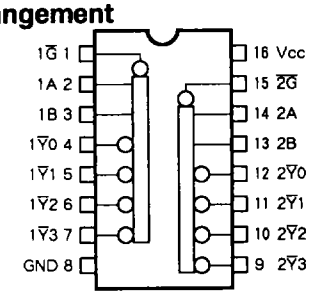
10. IC INFORMATION

- The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

■ TC74AC139F (MMCB UNIT:IC109)

•DUAL 2 to 4 LINE DECODER

• Pin Arrangement

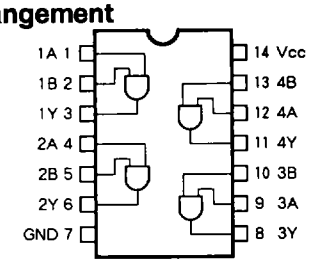


(TOP VIEW)

■ TC74AC08F (MMCB UNIT:IC103)

•QUAD 2-INPUT AND GATE

• Pin Arrangement

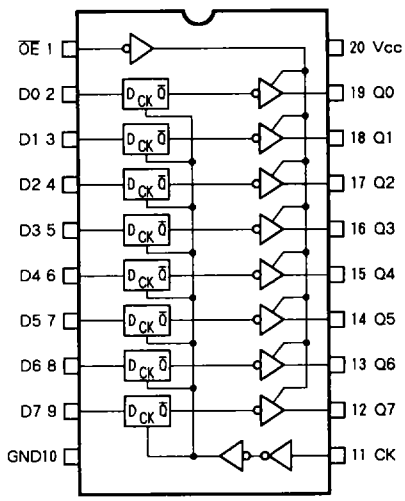


(TOP VIEW)

■ TC74AC574F (MMCB UNIT:IC107, 108)

•OCTAL D-TYPE FLIP FLOP with 3-STATE OUTPUT

• Pin Arrangement

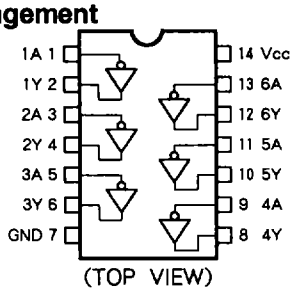


(TOP VIEW)

■ TC74AC04F (MMCB UNIT:IC101, 104)

•HEX INVERTER

• Pin Arrangement

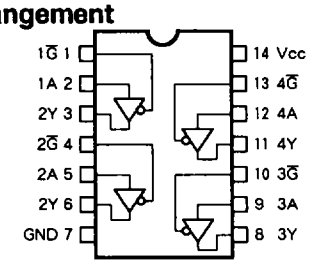


(TOP VIEW)

■ TC74HC125AF (MMCB UNIT:IC106, 129-131)

•QUAD BUS BUFFER

• Pin Arrangement

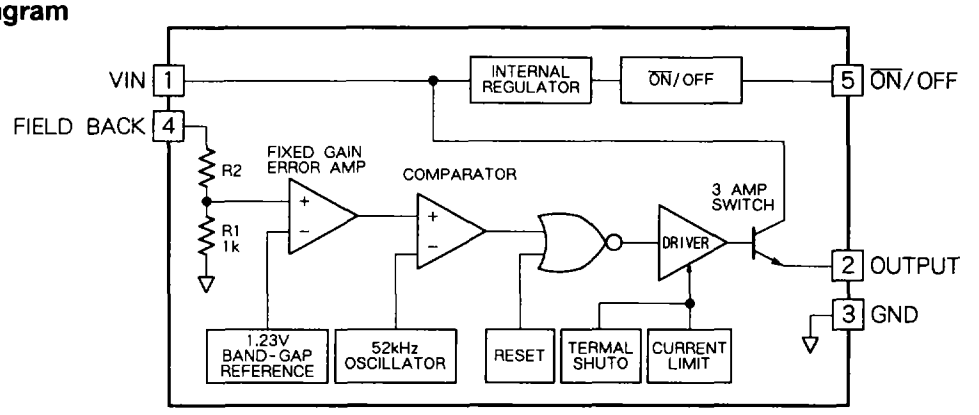


(TOP VIEW)

■ LM2576T-5.0/LB03 (PWR2 UNIT:IC251)

•DD CONVERTER IC

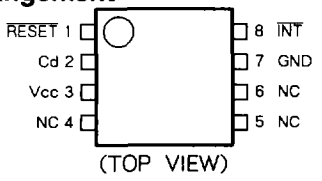
• Block Diagram



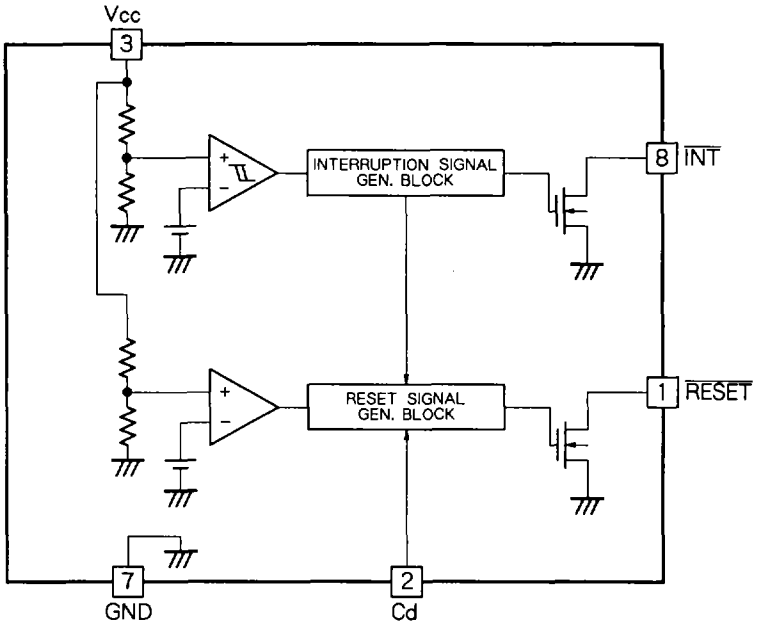
■ M62008FP(MMCB UNIT:IC117)

•RESET IC

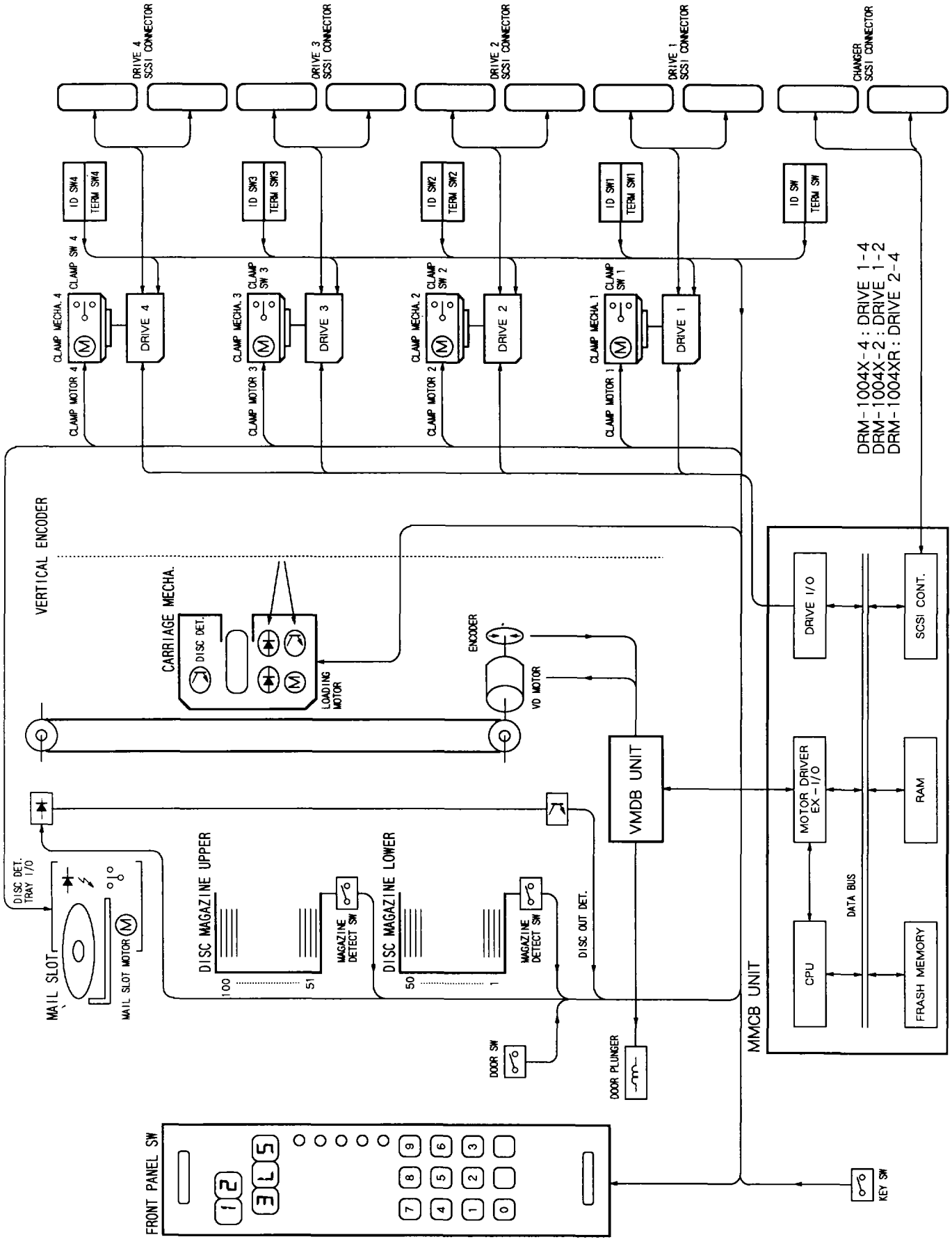
• Pin Arrangement



• Block Diagram

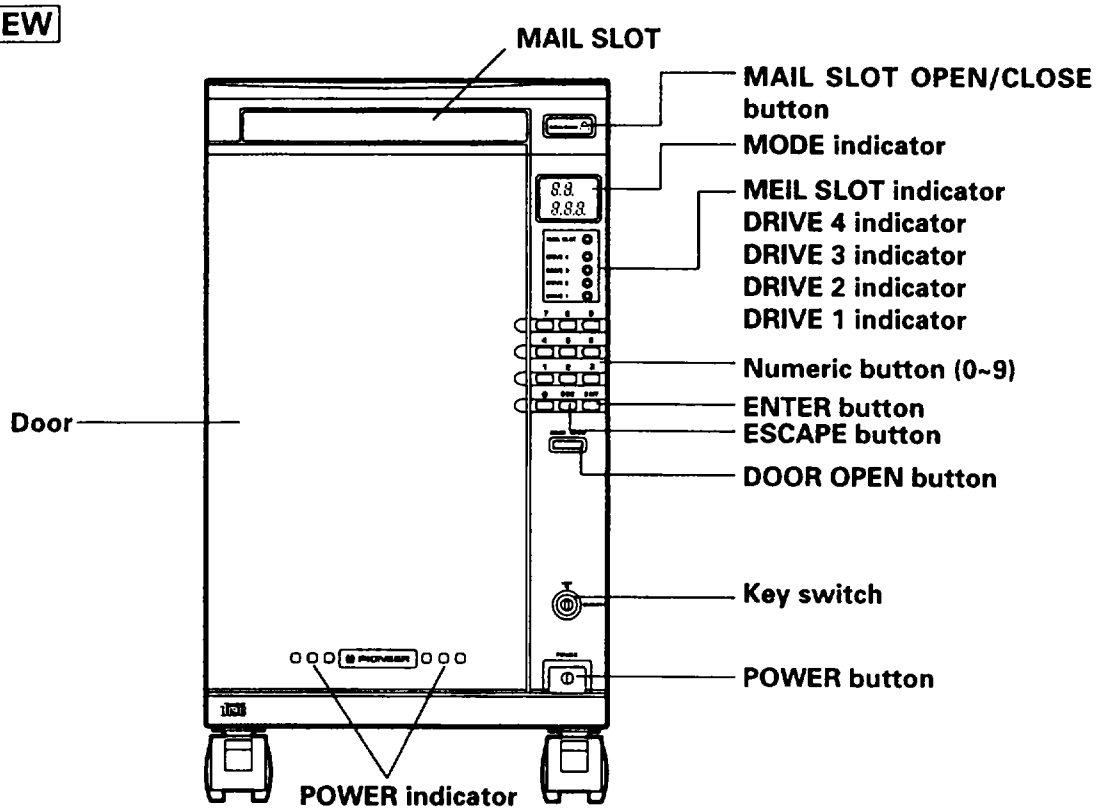


11. BLOCK DIAGRAM

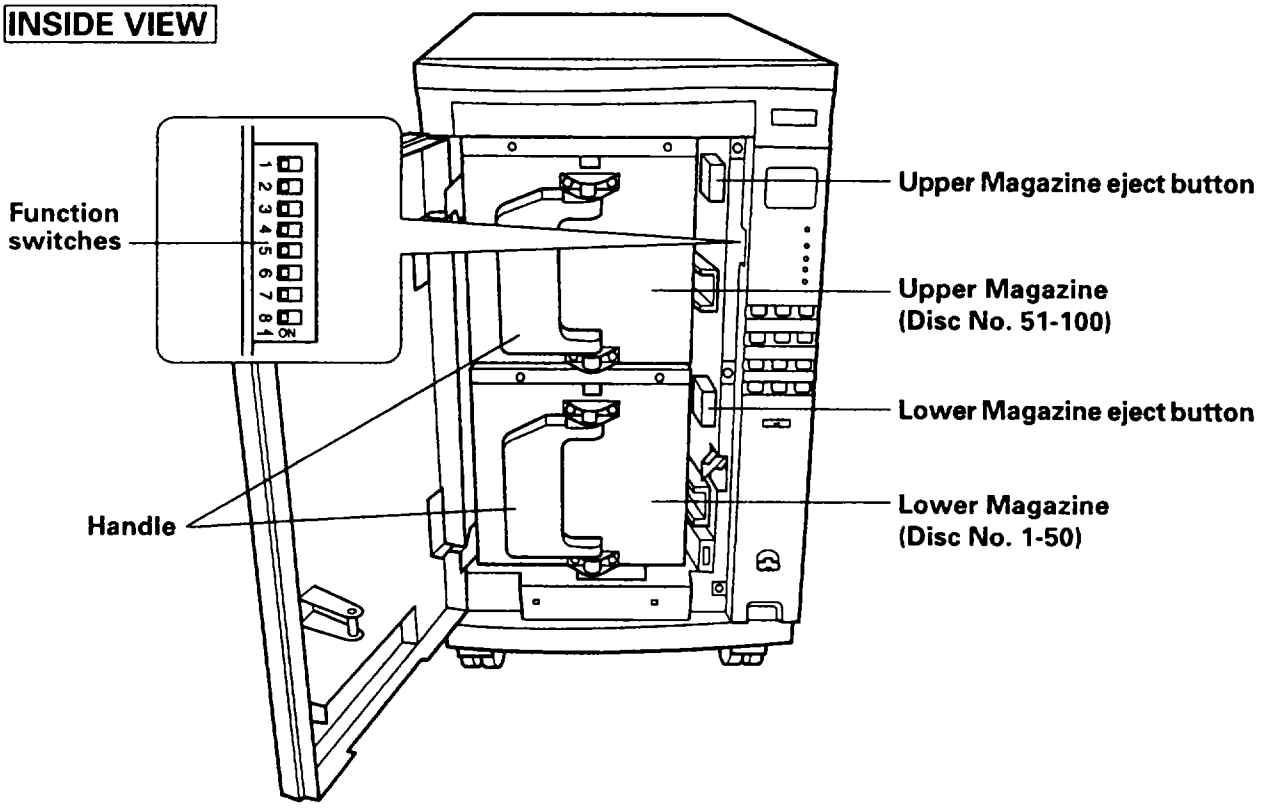


12. PANEL FACILITIES

FRONT VIEW

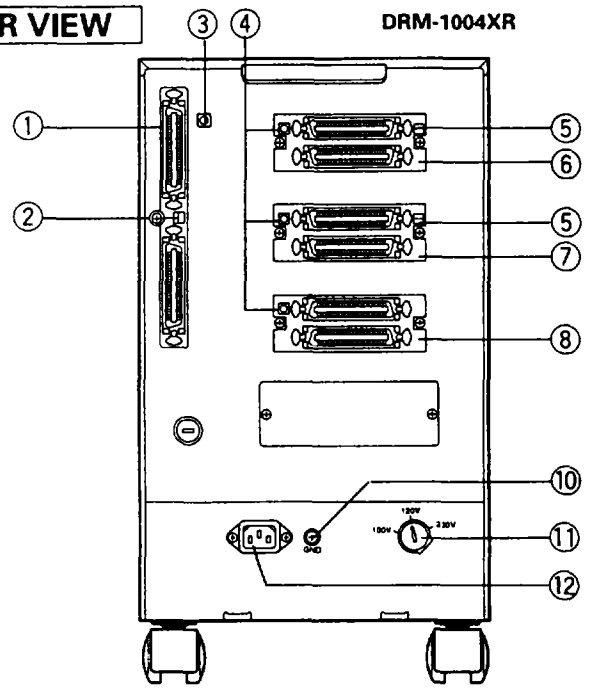


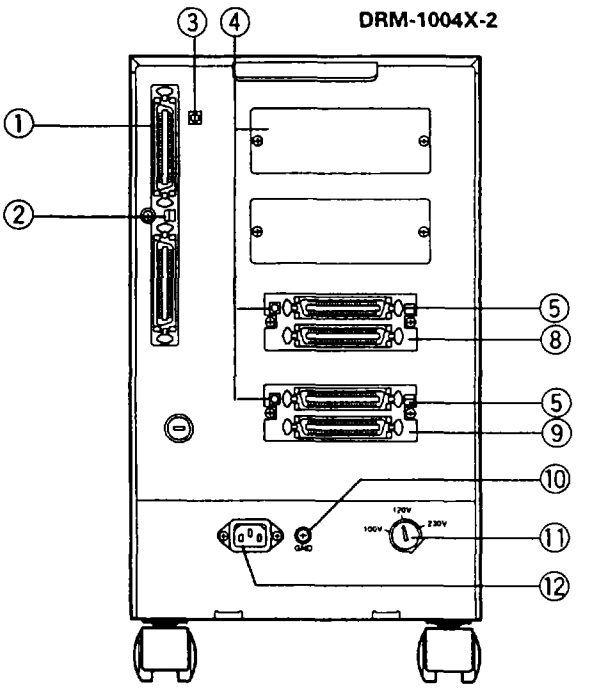
INSIDE VIEW



DRM-1004X-4, DRM-1004X-2, DRM-1004XR, DR-D4XI, DR-R4XI, DR-D134X

REAR VIEW





① SCSI connector

② Function switches

When components are connected through the SCSI connection, the terminator should be attached to the last component in the connection. In case this Changer is the last component, set this switch to the ON position.

③ SCSI ID switch for Autochanger

④ SCSI ID switch for reader/writer

Assign a unique SCSI ID to each unit when several units are used on a same SCSI bus (in a daisy chain).

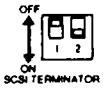
Assign the ID number of the component connected through the SCSI. Be careful to never assign the same number to more than one component. If an identical number is assigned to more than one component, system operation will be impossible.

NOTE:

When setting the SCSI IDs, be careful not to leave the pointer arrow of the SCSI ID switch between two figures; be sure to set the switch so that the arrow points a single figure.

- With the DRM-1004X-4, set the five SCSI ID switches to different positions.
- With the DRM-1004XR, set the four SCSI ID switches to different positions.
- With the DRM-1004X-2, set the three SCSI ID switches to different positions.

⑤ Function switches for reader



When components are connected through the SCSI connection, the terminator should be attached to the last component in the connection. In case this drive is the last component, set this switch to the ON position.

Data block size switching between 512 bytes <=> 2048 bytes.

⑥ SCSI connector for drive 4

⑦ SCSI connector for drive 3

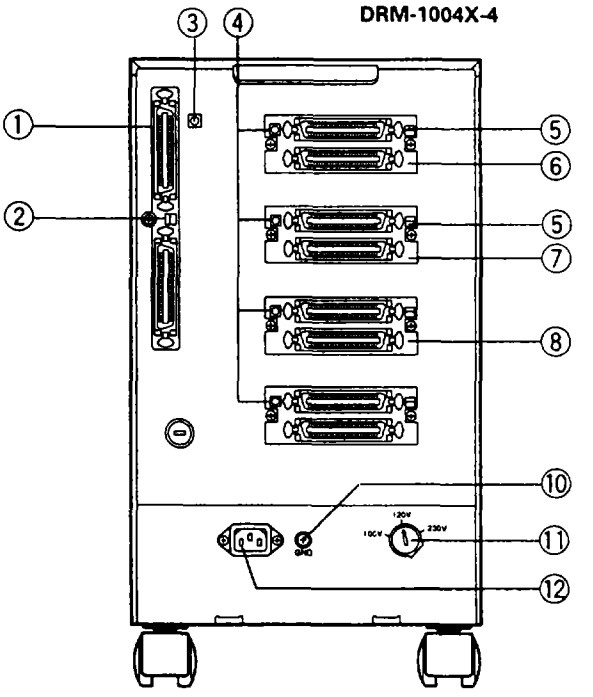
⑧ SCSI connector for drive 2

⑨ SCSI connectro for drive 1

⑩ Ground (GND) terminal

⑪ VOLTAGE SELECTOR

⑫ ∿AC inlet



The DRM-1004X-2 accepts up to two DR-D134X option drives. However, for safety, the addition operation which requires expertise should be performed by our qualified service personnel. For details, please consult you dealer or nearest PIONEER service agent.

13. SPECIFICATIONS

■ General

System ..... 100 disc CD-ROM changer
Disc ..... 12 cm/5-inch CD-ROM disc
Power requirements ..... AC 100V/120V/230V (switchable)
50/60 Hz
Current drain
DRM-1004XR ..... 1.5A(100V)
1.3A(120V)
0.9A(230V)
DRM-1004X-4 ..... 1.4A(100V)
1.2A(120V)
0.8A(230V)
DRM-1004X-2 ..... 1.3A(100V)
1.1A(120V)
0.6A(230V)
Weight (with disc magazine, without discs)
DRM-1004XR ..... 33.1 kg (73 lb)
DRM-1004X-4 ..... 33.6 kg (74 lb 1 oz)
DRM-1004X-2 ..... 30.8 kg (67 lb 15 oz)
Dimensions ..... 263 (W) x 484 (H) x 585 (D) mm
10-11/32 (W) x 19-1/16 (H) x 23-1/16 (D) in
Operating temperature ..... +5°C ~ +35°C
+41°F ~ +95°F
Operating humidity ..... 5% - 90% (no condensation)
Storage temperature ..... -40°C ~ +60°C
-40°F ~ +140°F

■ Functions

Disc storage (12 cm/5-inch discs) ..... 500 discs
Removable disc magazines
..... 2 magazines which hold 50 discs each can be stored.

■ Accessories

Disc magazine 2
Door key (for front door locking) 2
SCSI cable
DRM-1004XR 3
DRM-1004X-4 4
DRM-1004X-2 2
Power cord 1
Operating Instructions 1

NOTE:

- *Specifications and design are subject to possible modifications without notice, due to improvements.*

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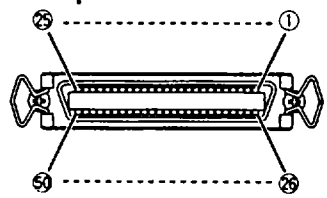
SCSI connector specifications



1) Pin layout of SCSI connectors

Signal name	Pin No.		Signal name
GROUND	1	26	-DB(0)
GROUND	2	27	-DB(1)
GROUND	3	28	-DB(2)
GROUND	4	29	-DB(3)
GROUND	5	30	-DB(4)
GROUND	6	31	-DB(5)
GROUND	7	32	-DB(6)
GROUND	8	33	-DB(7)
GROUND	9	34	-DB(P)
GROUND	10	35	GROUND
GROUND	11	36	GROUND
GROUND	12	37	GROUND
NC	13	38	TERMPWR
GROUND	14	39	GROUND
GROUND	15	40	GROUND
GROUND	16	41	-ATN
GROUND	17	42	GROUND
GROUND	18	43	-BSY
GROUND	19	44	-ACK
GROUND	20	45	-RST
GROUND	21	46	-MSG
GROUND	22	47	-SEL
GROUND	23	48	-C/D
GROUND	24	49	-REQ
GROUND	25	50	-I/O

Notes:

- *Pin No. 13 is not grounded.*
- *This unit does not supply TERMPWR but accepts an external supply.*
- *The connectors are of the shielded type.*
- *For details on the control commands, refer to the separate specifications manual.*

2) Electrical specifications of SCSI

Output characteristics	The signals driven by SCSI equipment present the following output characteristics. True (LOW): VOL = 0.0 to 0.4 V DC IOL = 48 mA (0.5 V DC) max. False (HIGH): VOH = 2.5 to 5.25 V DC
Input characteristics	The signals driven by SCSI equipment present the following input characteristics. True (LOW): VOL = 0.0 to 0.4 V DC IOL = -0.4 mA (0.4 V DC) max. False (HIGH): VOH = 2.0 to 5.25 V DC

Notes:

- *As the SCSI interface is of the single-end type, it should be terminated on both ends of the cable.*
- *The maximum recommended length of an SCSI cable is 6 meters (20 feet) (including internal wiring).*